

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

STUDENTS FOR FAIR ADMISSIONS, INC.,

Plaintiff,

Civil Action
No. 14-14176-ADB

v.

October 30, 2018

PRESIDENT AND FELLOWS OF HARVARD
COLLEGE, et al.,

Pages 1 to 185

Defendants.

TRANSCRIPT OF BENCH TRIAL - DAY 12
BEFORE THE HONORABLE ALLISON D. BURROUGHS
UNITED STATES DISTRICT COURT
JOHN J. MOAKLEY U.S. COURTHOUSE
ONE COURTHOUSE WAY
BOSTON, MA 02210

JOAN M. DALY, RMR, CRR
KELLY MORTELLITE, RMR, CRR
Official Court Reporter
John J. Moakley U.S. Courthouse
One Courthouse Way, Room 5507
Boston, MA 02210
joanmdaly62@gmail.com

1 APPEARANCES:

2 COUNSEL FOR THE PLAINTIFF:
3

4 ADAM K. MORTARA, ESQUIRE
5 J. SCOTT McBRIDE, ESQUIRE
6 KRISTA J. PERRY, ESQUIRE
7 Bartlit Beck Herman Palenchar & Scott
8 54 West Hubbard Street
9 Suite 300
Chicago, Illinois 60654
312.494.4400
adam.mortara@bartlit-beck.com
scott.mcbride@bartlit-beck.com
krista.perry@bartlit-beck.com

10 JOHN M. HUGHES, ESQUIRE
11 KATHERINE L.I. HACKER, ESQUIRE
12 MEG E. FASULO, ESQUIRE
13 Bartlit Beck Herman Palenchar & Scott
14 1801 Wewatta Street
15 Suite 1200
Denver, Colorado 80202
303.592.3100
john.hughes@bartlit-beck.com
meg.fasulo@bartlit-beck.com
kat.hacker@bartlit-beck.com

16 JOHN MICHAEL CONNOLLY, ESQUIRE
17 THOMAS R. MCCARTHY, ESQUIRE
18 WILLIAM S. CONSOVOY, ESQUIRE
19 Consovoy McCarthy Park PLLC
20 3033 Wilson Boulevard
21 Suite 700
Arlington, Virginia 22201
703.243.9423
mike@consovoymccarthy.com
tom@consovoymccarthy.com
will@consovoymccarthy.com

22
23
24
25

1 APPEARANCES (cont.):

2 PATRICK STRAWBRIDGE, ESQUIRE
3 Consovoy McCarthy Park PLLC
4 Ten Post Office Square
5 8th Floor, South, PMB #706
6 Boston, Massachusetts 02109
7 617.227.0548
8 patrick@consovoymccarthy.com

9 MICHAEL H. PARK, ESQUIRE
10 Consovoy McCarthy Park PLLC
11 3 Columbus Circle
12 15th Floor
13 New York, New York 10024
14 646.456.4432
15 park@consovoymccarthy.com

16 PAUL M. SANFORD ESQUIRE
17 BENJAMIN C. CALDWELL, ESQUIRE
18 Burns & Levinson LLP
19 One Citizens Plaza
20 Suite 110
21 Providence, Rhode Island 02903
22 401.831.8330
23 psanford@burnslev.com
24 bcaldwell@burnslev.com

25 COUNSEL FOR THE DEFENDANT:

WILLIAM F. LEE, ESQUIRE
FELICIA H. ELLSWORTH, ESQUIRE
ANDREW S. DULBERG, ESQUIRE
ELIZABETH C. MOONEY, ESQUIRE
SARAH R. FRAZIER, ESQUIRE
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, Massachusetts 02109
617.526.6556
william.lee@wilmerhale.com
felicia.ellsworth@wilmerhale.com
andrew.dulberg@wilmerhale.com
elizabeth.mooney@wilmerhale.com
sarah.frazier@wilmerhale.com

1 APPEARANCES (cont.):

2 SETH P. WAXMAN, ESQUIRE
3 DANIELLE CONLEY, ESQUIRE
4 DANIEL WINIK, ESQUIRE
5 BRITTANY AMADI, ESQUIRE
6 PAUL R.Q. WOLFSON, ESQUIRE
7 Wilmer Cutler Pickering Hale and Dorr LLP
8 1875 Pennsylvania Ave, NW
9 Washington, DC 20006
202.663.6006
seth.waxman@wilmerhale.com
danielle.conley@wilmerhale.com
daniel.winik@wilmerhale.com
brittany.amadi@wilmerhale.com
paul.wolfson@wilmerhale.com

10 DEBO P. ADEGBILE, ESQUIRE
11 Wilmer Cutler Pickering Hale and Dorr LLP
12 7 World Trade Center
13 250 Greenwich Street
New York, New York 10007
212.295.6717
debo.adegbile@wilmerhale.com

14 ARA B. GERSHENGORN, ESQUIRE
15 Harvard Office of the General Counsel
16 Smith Campus Center
Suite 980
1350 Massachusetts Avenue
Cambridge, Massachusetts 02138
617.495.8210
ara_gershengorn@harvard.edu

19 COUNSEL FOR AMICI STUDENTS:

20 JON M. GREENBAUM, ESQUIRE
21 BRENDA L. SHUM, ESQUIRE
22 GENEVIEVE BONADIES TORRES, ESQUIRE
23 KRISTEN CLARKE, ESQUIRE
1500 K Street NW, Suite 900
Washington, DC 20005
202.662.8315
jgreenbaum@lawyerscommittee.org
24 bshum@lawyerscommittee.org
gtorres@lawyerscommittee.org
25 kclarke@lawyerscommittee.org

1 APPEARANCES (cont.):

2 LAWRENCE CULLEEN, ESQUIRE
3 EMMA DINAN, ESQUIRE
4 Arnold & Porter LLP
5 555 Twelfth Street, NW
6 Washington, DC 20004
202.942.5477
gina.dean@aporter.com
emma.dinan@aporter.com

7 COUNSEL FOR AMICI ORGANIZATIONS:

8 JENNIFER A. HOLMES, ESQUIRE
9 CARA McCLELLAN, ESQUIRE
JIN HEE LEE, ESQUIRE
10 MICHAEL M. TURNAGE YOUNG, ESQUIRE
11 RACHEL N. KLEINMAN, ESQUIRE
NAACP Legal Defense and Educational Fund, Inc.
12 700 14th Street NW
Suite 600
Washington, DC 20005
13 jholmes@naacpldf.org
cmcclellan@naacpldf.org
14 jlee@naacpldf.org
mturnageyoung@naacpldf.org
15 rkleinman@naacpldf.org

16 KENNETH N. THAYER, ESQUIRE
17 KATE R. COOK, ESQUIRE
Sugarman Rogers
18 101 Merrimac Street
Suite 900
19 Boston, Massachusetts 02114
617.227.3030
thayer@sugarmanrogers.com
20 cook@sugarmanrogers.com

21

22

23

24

25

P R O C E E D I N G S

(The following proceedings were held in open court before the Honorable Allison D. Burroughs, United States District Judge, United States District Court, District of Massachusetts, at the John J. Moakley United States Courthouse, One Courthouse Way, Boston, Massachusetts, on October 30, 2018.)

THE COURT: Can I see counsel at sidebar, please.

[Sidebar sealed and redacted.]

THE COURT: Okay. When you're ready.

MR. WAXMAN: Your Honor, Harvard calls President Ruth Simmons.

(RUTH SIMMONS, duly sworn by Deputy Clerk.)

COURTROOM CLERK: Will you please state your name and spell your last name for the record.

THE WITNESS: My name is Ruth Simmons,
S-I-M-M-O-N-S.

EXAMINATION BY MR. WAXMAN:

Q. Good morning, President Simmons.

A. Good morning.

Q. What is your current position and title?

A. I'm currently president of Prairie View A&M University in Texas.

Q. Have you been asked by Harvard to testify as an expert in this matter?

1 **A.** I have.

2 **Q.** Are you being compensated for your time and expertise in
3 this case?

4 **A.** I am not.

5 **Q.** Did Harvard offer to compensate you?

6 **A.** Yes, they did.

7 **Q.** Before we discuss the questions that you were asked to
8 address, could you please tell us something about your family
9 background and where you grew up?

10 **A.** I was born the last of 12 children in Grapeland, Texas.
11 I was born in a sharecropper's shack on a plantation. I
12 lived there with my family until I was seven years old, after
13 which my family moved to Houston.

14 We lived in Houston in the notorious Fifth Ward,
15 sometimes called "Bloody Fifth Ward," a segregated community
16 in the shadow of downtown Houston. I went to elementary
17 school, middle school, and high school in the Fifth Ward in a
18 completely segregated environment.

19 **Q.** Did you attend college?

20 **A.** I did.

21 **Q.** Where?

22 **A.** I went to Dillard University in New Orleans.

23 **Q.** And did you spend all four years at Dillard?

24 **A.** No. I went to Wellesley college my junior year, with a
25 junior year exchange program between Dillard and Wellesley.

1 **Q.** Let me ask you a few questions about Dillard and then
2 Wellesley.

3 Tell us about your educational experience at
4 Dillard.

5 **A.** Well, in the early '60s, mid-'60s, higher education was
6 still relatively segregated in the South. Dillard was an
7 African-American institution, formed just after slavery and
8 supported by the Methodist church. So all the students were
9 African-American.

10 However, many faculty, white faculty from the
11 North, interested in doing something to address the
12 inequities in education, either retired from their positions
13 in the universities in the North or decided to come South to
14 work in historically black universities.

15 And so for the first time in my life, I was exposed
16 to different races, mostly because of the white faculty who
17 had come to Dillard to teach. And this had a profound
18 experience on me because for the most part, during my time at
19 Dillard, these were the faculty who nurtured me and who gave
20 me inspiration to do the things that I had done.

21 **Q.** At the time that you were at Dillard, did you have the
22 opportunity to become exposed to other cultures?

23 **A.** Certainly not through experiences with my peers, but
24 because of the faculty putting in front of me opportunities
25 to learn more about other cultures, I was inspired to go to

1 Mexico to study Spanish.

2 So at the end of my first year, I got on a bus and
3 went to Mexico to live with a Mexican family and to study --
4 and to study Spanish. It was a -- the French have a term,
5 bouvsea (ph), completely overturned my world having the
6 opportunity to encounter this very different culture.

7 **Q.** Was Mexico a segregated -- were you living in a
8 segregated environment in Mexico?

9 **A.** Well, I wouldn't call it segregated.

10 **Q.** I know, they were all Mexicans but --

11 **A.** Yes.

12 **Q.** Were you segregated?

13 **A.** I don't even think that Mexico, at the time, thought in
14 terms of segregation. Segregation at the time was a uniquely
15 American construct, I would say. And so there were certainly
16 many different people who were in Saltillo, some of them as
17 tourists, some of them as students and so forth. So there
18 were other students, white students in the Spanish program
19 that I was a part of, but I was living fundamentally with a
20 Mexican family.

21 **Q.** So you mentioned that you spent your junior year at
22 Wellesley. How did that come about?

23 **A.** Well, I'm not sure whether or not Dillard wanted to get
24 rid of me, but at one point the president called me to the
25 president's house and told me that I had been designated as

1 the Dillard student to go to Wellesley that year. And he
2 asked me if I would be willing to do that. And he was a very
3 imposing figure, this president, and so of course I said yes.
4 Being terrified, nonetheless.

5 So I went to Wellesley and obviously for the first
6 time in this country, I was exposed to peers who were white
7 and it was a -- quite an experience for me.

8 **Q.** Did you form relationships with your peers at Wellesley?

9 **A.** I did. I was the only African-American student on my
10 hallway. Nevertheless, the students welcomed me quite
11 warmly, and I became very close to a number of the students
12 on the hallway. All of whom I would say were white but who
13 came from different parts of the country.

14 One student in particular was from a farming
15 community in Connecticut, and she took me home with her when
16 we had long weekends or holidays. I formed a relationship
17 with a Jewish girl from Philadelphia, and she took me home
18 with her to Philadelphia during holidays.

19 So it was a wonderful experience in that regard.

20 **Q.** Did you continue your education after graduating from
21 Dillard?

22 **A.** I did. I received a Fulbright fellowship and went to
23 study in France at the University of Beaune.

24 **Q.** What were you studying?

25 **A.** I was reading Proust, which couldn't have been farther

1 afield from my background, actually. Reading Proust.

2 **Q.** When you completed Swann's Way or the entire cycle, what
3 did you do then?

4 **A.** I came back to -- actually, I was in France during the
5 student riots and though it was very hard to get back, I
6 managed to get to Geneva and take a flight home.

7 I came back and I was married that summer that I
8 returned. And my husband had intended a career in the
9 foreign service and wanted to be part of a program at
10 U.S.I.A. So we went to Washington where he was part of that
11 program, and I took a job as an interpreter at the U.S.
12 Department of State and I enrolled in classes at George
13 Washington University.

14 **Q.** Did you come to obtain a Ph.D.?

15 **A.** I did.

16 **Q.** Where did you earn your Ph.D.?

17 **A.** I earned my Ph.D from Harvard in the Romance languages
18 and literatures department.

19 **Q.** Why did you decide to study Romance languages, other than
20 having a year reading Proust?

21 **A.** It's very hard to convey at this distance what it was
22 like to grow up in a deeply segregated environment in Texas.
23 But one of the things I can say is that that environment
24 shaped my thinking about the possibilities in life that
25 awaited me. It shaped my thinking about what I was worth as

1 a person. It shaped my thinking about who whites were, and
2 what their motives were in regard to me and my family.

3 And I somehow knew that one of the things that I
4 needed to do was to escape from the thinking that had been
5 imposed upon me by virtue of this trenchant segregation. And
6 once I started studying language, and certainly once I went
7 to Mexico and saw that there was a different people there who
8 made no presumptions about me, I came to the conclusion that
9 my own view for the world was very narrow and one way for me
10 to resolve some of the presumptions that I had was to study
11 language.

12 And as -- the more I got -- more deeply I got into
13 the study of language, I found that it was extremely
14 beneficial to exploiting the assumptions that I grew up with.
15 And so I thought, well, why not do that for the rest of my
16 life and impart that to other young people.

17 So that's how I came to be in the career that I'm
18 in.

19 **Q.** Let's turn now to your work in the field of higher
20 education.

21 Would you please turn to Tab 1 of your book, which
22 is Defense Exhibit 134?

23 **A.** Yes.

24 **Q.** What is this document?

25 **A.** I believe that's an abbreviated CV.

1 **Q.** Okay. And Mr. Lee, could we have page 2 of the CV on the
2 screen.

3 President Simmons, I'm directing you now to the
4 part of your CV that describes your experience in the field
5 of higher education. Does this fairly represent your
6 professional positions with universities?

7 **A.** Yes, it does.

8 **Q.** Now let's focus -- let's go through these one by one.

9 So with starting your work at Radcliffe, what did
10 you do there and for how long?

11 **A.** Well, while I was a graduate student at Harvard, I was
12 surprised to be asked to serve as an admissions officer at
13 Radcliffe; and I agreed to do that, and so I worked for two
14 years in the Radcliffe admissions office.

15 **Q.** And then going down under employment history to
16 Princeton, looking at your first role at Princeton, what did
17 you do and for how long?

18 **A.** I was director of studies at Butler College, a
19 residential college at Princeton University, and I did that
20 for two years.

21 **Q.** And what did you do next?

22 **A.** I was asked to direct the Afro-American studies program
23 at Princeton, actually to build it. And so I took that on
24 from 1985 to '87, and then was asked to become assistant dean
25 of the faculty at Princeton and then associate dean of the

1 faculty.

2 **Q.** And after Princeton, what happened?

3 **A.** Well, I decided that it might be useful for me to take my
4 experience to a minority-serving institution, and so I left
5 Princeton to go to Spelman College, where I became provost.

6 **Q.** And can you just describe the characteristics of Spelman
7 College?

8 **A.** Spelman College is an African-American college for women.
9 It is a liberal arts college, very small college.

10 **Q.** And what were your duties there?

11 **A.** Essentially to oversee academic affairs at the college.

12 **Q.** And we're working our way up your employment history. I
13 see that you then went -- you then returned to Princeton.

14 **A.** Yes.

15 **Q.** And what were your duties in the role of vice-provost?

16 **A.** I was asked to return to Princeton, to become
17 vice-provost because of a change in the administrative
18 structure of the university, and I fulfilled that role as
19 deputy to the provost.

20 **Q.** What did you do next?

21 **A.** I was asked to become president of Smith College.

22 **Q.** And I see here that you served for six years at Smith,
23 from 1995 to 2001?

24 **A.** I did. Yes.

25 **Q.** Prior to your appointment, had Smith College ever had an

1 African-American president?

2 **A.** No.

3 **Q.** Let's go next up the line. How did you get to Brown?

4 **A.** How did I get to Brown?

5 **Q.** I know, by Interstate 90, but --

6 **A.** I wasn't going to say that, but it's clever.

7 I was asked to -- I was invited by the board of
8 trustees of Brown to serve as president of Brown.

9 **Q.** And prior to your appointment, had Brown ever had a
10 permanent female president?

11 **A.** No.

12 **Q.** Prior to your appointment, had Brown ever had an
13 African-American president?

14 **A.** No.

15 **Q.** Prior to your appointment, had any Ivy league university
16 ever had an African-American president?

17 **A.** No.

18 **Q.** And I see that you served as president of Brown for 11
19 years, if my math is right?

20 **A.** Yes.

21 **Q.** And then there's a gap. What did you do next? An
22 uncharacteristic gap.

23 **A.** I retired, very happily.

24 **Q.** And what did you do in retirement? Other than simply all
25 that Providence has to offer.

1 **A.** Well, I actually went back to Houston and became involved
2 in some of the programs that were familiar to me as a young
3 person. I started first with supporting a preschool program
4 for African-American children in a housing project in the
5 Fifth Ward. And then I became involved with the community
6 center in my old neighborhood, and then I took on the
7 leadership of a new effort to support the improvement of
8 public schools in Houston.

9 **Q.** So that sounds lovely. How did you then come to leave
10 retirement and become president of Prairie View A&M? How and
11 why?

12 **A.** Quite unexpectedly. The chancellor of the Texas A&M
13 system called me up and asked to meet with me to discuss
14 becoming interim president of Prairie View because the
15 president was leaving. And I thought, of course, that this
16 was a foolish idea and -- but nevertheless assured him that I
17 would give it some thought.

18 I did for some period of time and then concluded
19 that, again, it was my responsibility, given all of the help
20 that I received as a young person, that it would be
21 appropriate for me to try to help the students at Prairie
22 View today, and so I agreed to take on the interim position.

23 **Q.** And how did your interim status turn into a non-interim
24 status?

25 **A.** They asked me to continue and I agreed to do so.

1 **Q.** Looking back at the three institutions that you served as
2 president, Smith, Brown and Prairie View, do those
3 institutions have different educational missions?

4 **A.** Distinctly so.

5 **Q.** How so?

6 **A.** Well, I mean, I suppose any institution is founded first
7 and continues on the basis of the mission that helped to
8 create it.

9 In the case of Prairie View, two ex-slaves, during
10 Reconstruction, put through legislation in the state -- in
11 the Texas legislature to create a school for black youth.
12 The truth is African-Americans were not permitted to be
13 educated, as you know, during slavery in the South. And the
14 only way to assure that freed slaves would now have an
15 opportunity to be educated was to create schools for them,
16 which is how most HBCUs came into being.

17 At the same time, the legislature created a school
18 for white youth to ensure that never the twain shall meet.

19 So Prairie View was formed in that context and for
20 many, many years was the principal way for African-Americans
21 in Texas to gain a higher level education.

22 **Q.** And how, if at all, has that manifested, that history
23 manifested in the mission of Prairie View today?

24 **A.** It continues to prize that legacy and to believe that its
25 mission is to continue to make opportunities available for

1 African-American youth and others who come from
2 non-privileged backgrounds, let's say. Over 80 percent of
3 the students at Prairie View are Pell-eligible students. And
4 so it is very proud of that tradition and continues to
5 enforce that today.

6 **Q.** And what percentage of the current undergraduate
7 population at Prairie View is African-American?

8 **A.** Over 80 percent.

9 **Q.** What about Smith?

10 **A.** Well, Smith was formed at a time when people routinely
11 said that women were incapable of higher order intellection.
12 In fact, I remember reading that people argued that serious
13 intellectual study would somehow affect the reproductive
14 organs of women, and therefore it would be dangerous for
15 women to study at university because, I suppose, the species
16 would disappear, ultimately.

17 And so at a particular time in history, these
18 institutions were created not just so that women could be
19 educated but Smith was specifically created so that women
20 could be educated on a par with men in the best universities
21 in the country.

22 And so that was the origin of the college, and it
23 continued after that to insist on equality for women, the
24 ability of women, the proof, in a sense, that women had the
25 ability to do any order of thinking that a man could do.

1 And, in fact, when I was there as president, one of
2 the things that I did was to create a program for a -- a
3 program for women in engineering because of the problem that
4 women were having in gaining access to engineering degrees.

5 So it continues to have the same essential mission
6 today, to provide a place for women to be educated well.

7 **Q.** Let's turn to Brown, which was created during the
8 Colonial era, and I'm willing to -- I'm ready to hear you say
9 that it is not rigidly continuing its original mission.

10 But leaving aside my asides, what about Brown?

11 **A.** Well, it was created as the Baptist university for the
12 country at the time. It has evolved, as other Colonial
13 universities have, to be a broad-ranging university that has
14 still as its aim to prepare students for leadership roles.

15 At the time that the country was formed, there were
16 many people very concerned about whether or not in this
17 nascent country there were people sufficiently fit to lead
18 this nation. That, too, was part of what Brown leaders were
19 thinking at the time; that there was a desperate need for
20 leaders who had the breadth of education and the leadership
21 ability to provide for this nation a future that was secure.

22 And so Brown continues to do that today, to educate
23 young people for leadership positions, and in the broadest
24 liberal arts context.

25 **Q.** Let's turn now to the questions that we asked you to

1 address.

2 And Mr. Lee, could we pull up Demonstrative 9.2.

3 What questions were you asked to testify about?

4 **A.** I was asked to testify to, one, the question of what
5 benefits flow to students, institutions, and society from a
6 diverse undergraduate student body; and second, do certain
7 criticized admissions practices serve legitimate
8 institutional interests?

9 **Q.** And we're going to go through these, each one of them,
10 separately in some detail. But as to question number one, do
11 you have an opinion?

12 **A.** I do.

13 **Q.** And what is your opinion?

14 **A.** My opinion is that benefits definitely flow to students,
15 institutions, and society from a diverse undergraduate
16 student body.

17 **Q.** And turning to now question two, do you have an opinion
18 on the second question?

19 **A.** My opinion on the second question, based on my decades of
20 experience and my first-hand observations of students and
21 alumni, that the criticized admissions practices serve
22 legitimate institutional interests.

23 **Q.** Mr. Lee, please pull up the next demonstrative.

24 And President Simmons, could you just explain to
25 the court which admissions practices you will be offering,

1 you've discussed in your reports and will be discussing
2 today?

3 **A.** Yes. These practices include legacy status,
4 contributions to the university, children of faculty or
5 staff, athletic achievement, and early action.

6 **Q.** And what is your opinion regarding those practices?

7 **A.** My opinion, based on my experience, is that all of them
8 play a legitimate role in the admission process.

9 MR. WAXMAN: Your Honor, I've been given a note to
10 remind me that I forgot to offer into evidence Defense
11 Exhibit 134, which is her CV.

12 MR. CONNOLLY: No objection.

13 THE COURT: It's admitted.

14 (Defendant Exhibit 134 admitted into evidence.)

15 **Q.** In forming your opinions you'll be expressing today, did
16 you review the statement of Harvard's educational mission?

17 **A.** Yes, I did.

18 **Q.** Would you please turn to Tab 2 in your binder, which is
19 Defense Exhibit 109, I believe, in evidence. And I want to
20 ask you to focus on the sentence that Mr. Lee is going to be
21 highlighting and ask you what that says.

22 **A.** "The mission of Harvard College is to educate the
23 citizens and citizen-leaders for our society."

24 **Q.** What do you understand that to mean?

25 **A.** Well, it's very much as I said in regard to what John

1 Adams expressed on his way to the Constitutional Convention;
2 and that is, what are the needs of societies and how can
3 institutions like Harvard prepare its students to play the
4 roles they need to play to maintain our way of life as a
5 country.

6 So educating citizens who will play important roles
7 in all manner of endeavors, and especially leaders in our
8 country.

9 **Q.** And did you conduct your analysis with that mission
10 statement in mind?

11 **A.** I certainly did.

12 **Q.** Let's turn to the next demonstrative, which is
13 Demonstrative 9.6, and look back at the first question.

14 Did you analyze the benefits that flow from
15 diversity?

16 **A.** I did.

17 **Q.** And looking at -- now at Demonstrative 9.7, can you
18 explain the categories of people in institutions who, in your
19 view, benefit from having a diverse undergraduate student
20 body?

21 **A.** Those categories are students, institutions, and society.

22 **Q.** Let's focus on individuals, students first.

23 **A.** Okay.

24 **Q.** How do individual students benefit from a diverse
25 university environment?

1 **A.** Our greatest concern as educators is always for the depth
2 of learning that students have access to. It is not enough
3 at our universities for students to come to sit in class, to
4 observe what they're told, and to leave with -- impoverished,
5 without having been deeply engaged in their learning.

6 Diversity provides an opportunity to deepen that
7 learning, to give students first-hand experience with
8 difference. And we know that difference is one of the
9 primary means for students to test themselves, to test their
10 background, to test their ideas, to challenge assumptions.
11 And in that context, it is in coming in contact with
12 difference that we tend to deepen our learning.

13 **Q.** So in referring to the benefits to students that you've
14 just described, are you limiting those -- do you limit those
15 benefits -- do your prior comments relate to the,
16 quote-unquote, diverse students who attend an institution,
17 say, the African-American, Hispanic and other
18 underrepresented minority students, or do your opinions apply
19 more broadly?

20 **A.** They apply to both.

21 So first of all, in challenging our assumptions, I
22 don't mean picking up different books that have dialectic
23 around a particular subject. I mean in every possible
24 respect coming in contact with difference. And that
25 certainly applies to having different faculty, having

1 different students live on your hallway, encountering
2 different students who come from backgrounds that are so
3 different from yours that you have no choice but to learn
4 about the complexity of the world that you're going into when
5 you graduate.

6 **Q.** Can you think of an example from your own undergraduate
7 experience that illustrates the point that you were just
8 addressing?

9 **A.** Yes. I use the example of my being in a classical
10 philosophy class at Wellesley at a time when apartheid was
11 probably the most important social, political issue around
12 the world; and naturally it came upon us to discuss apartheid
13 and the ethics surrounding that system. And, of course, I
14 was quite passionate about the evil of apartheid and how it
15 needed to be overturned.

16 I was pleased to discover that most of the students
17 in class, all of whom were white, shared -- seemed to share
18 my view about apartheid, except there was one young woman who
19 toward the end of the discussion raised her hand and
20 identified herself as a South African. I don't know if there
21 was an audible gasp in the room, but I certainly was
22 surprised. And she then began a spirited defense of
23 apartheid from the perspective of a white South African.

24 I had never encountered anything like that before
25 and it threw me into a state, but here is what I garnered

1 from that experience; that I was forced to listen to a
2 different opinion about South Africa, one that I never, under
3 ordinary circumstances, would have heard.

4 Today, I can remember no one in that class but I
5 can remember her. She had such an impact on me. And I would
6 say I often think that the person that I became as a scholar
7 and as a leader prized that interaction because I learned to
8 listen to difference. And I don't think I could have done
9 what I've done in my life, been the person I've been to my
10 students, if I had not had that experience.

11 **Q.** President Simmons, have you familiarized yourself with
12 Harvard's experience with diversity and inclusion sufficient
13 to express an opinion about how -- whether Harvard students
14 benefit from diversity?

15 **A.** I think I have.

16 **Q.** How do you know that?

17 **A.** Well, I've read many documents describing the way that
18 Harvard puts its students in touch with diversity. It's very
19 thoughtful. It's very deliberate, the way that students are
20 assigned to housing, which is quite something when you think
21 about it. The idea that when you go off to college you have
22 no control, really, over your living circumstances; that
23 you're put into an environment where you are challenged to
24 adjust. It's a powerful thing.

25 In the first year, students have no choice about

1 their living arrangements. Thereafter, they are assigned to
2 houses also. It's also the case that there are committees
3 that are responsible for intentionally creating an
4 environment in which students can learn from diverse others.
5 So I think -- I think that the university does a very good
6 job.

7 And by the way, I should say these actions are
8 fairly typical of what we have come to understand in
9 university life as being important to do so that our students
10 get that depth of learning that we're seeking.

11 **Q.** Let's turn to the next category that you identify, the
12 benefits flowing from diversity to institutions.

13 How do institutions like universities benefit from
14 having a diverse student population?

15 **A.** Well, one of the things that won't surprise you about
16 universities like Harvard and Brown is that we often think
17 that we are all-knowing. And so without the inputs of a lot
18 of different people over time, with different backgrounds and
19 different perspectives, we'd hardly change, I think, as
20 institutions.

21 But because we are open to difference and because
22 we have inputs that vary over time, our institutions change
23 and I believe change for the better. We make new
24 discoveries. We teach new courses. We create new fields.

25 And more than that, because we do all of those

1 things, our students all come to understand, in the course of
2 their lives, the great benefit that they have had by coming
3 to our institutions. And so that is why we can't get rid of
4 them. They come to our institutions and they stay on as
5 alumni forever, which is to our delight.

6 The standing that we enjoy around the world is
7 surely due to our diversity. Imagine Harvard's footprint
8 around the world. It's hard to imagine an institution that
9 is more prominent around the world than Harvard. Oxford
10 might say they're equally so, Cambridge might say. But I
11 don't know. I rather think that Harvard has a bit of the
12 edge when it comes to that because of the way they've
13 admitted students over time and because of the fields that --
14 in which they have excelled.

15 So our stature as institutions depends on the fact
16 that we have systematically over time brought many different
17 types of people to our institutions. They have gone back to
18 regions around the world and established a bigger footprint
19 for us.

20 **Q.** So does having a diverse student body, I'm asking you now
21 based on your experience, long experience as a professor and
22 a leader of institutions with professors, in your experience,
23 does having a diverse, engaged, safe environment for students
24 have an effect on the faculty of an institution?

25 **A.** Well, I would say it has an effect on the learning that

1 takes place in and out of the classroom. I can tell you as a
2 professor that having a homogeneous group of learners sitting
3 around a seminar table is not as catalytic as having students
4 with different backgrounds and different opinions sitting
5 around the seminar table. The discussion is more robust.
6 The depth of learning, as I said before, is more significant.
7 And the teacher probably gets better over time by having all
8 of these different scholars, students, available to them.

9 **Q.** So I think you mentioned earlier, I tried to write this
10 down, that having a diverse student body affects the research
11 agenda or the research questions.

12 Could you explain to Her Honor what you mean by
13 that?

14 **A.** Well, one of the -- one of the things that faculty
15 believe in American universities is that they have academic
16 freedom, and what that often suggests to them is that they're
17 free to pursue a course of research that is of interest to
18 them. And naturally, what that means is that if you have a
19 diversity of scholars, you also have a diversity of interests
20 and those interests will lead you to pursue different
21 scholarship.

22 And so you have only to look at the vastly
23 different scholarship that exists today as a consequence of
24 women coming more into the center of academic life and as a
25 result of minorities coming into the center of academic life.

1 When I was at Smith, I created a journal called
2 "Meridians," and it is a journal to highlight the research
3 being done on women of color. That would never exist, of
4 course, in the academic world if you didn't have people who
5 were varied and who were interested in the status of women in
6 India or the status of women in this country and so forth.

7 **Q.** So in sum, is it your opinion that Harvard could
8 accomplish its educational mission without the diversity that
9 you described?

10 **A.** It could accomplish a mission, but it would be an
11 impoverished mission that does not provide for its students
12 the kind of education that prepares them to live in the world
13 that we now have.

14 **Q.** Let's turn to the third category in your demonstrative.

15 How does society benefit from having diversity in
16 university education?

17 **A.** Well, I would say that we are bedevilled in society by
18 enduring schisms, schisms based on differences, political
19 differences, cultural differences, religious differences.
20 And those schisms sometimes break out and we're faced with
21 tragic circumstances.

22 Sorry. I'm thinking about the shooting in
23 Philadelphia -- in Pittsburgh. So -- so here is the thing.
24 What are you going to do in a society that is riven by
25 conflicts of all kinds? How are you going to mediate them if

1 you don't have people capable of doing that?

2 When we go back to our enclaves, enclaves of
3 sameness, how are we going to get to the point where we can
4 mediate these conflicts and have a peaceful society that
5 advances?

6 I don't know a way to do that if we don't prepare
7 people who can lead in such a society. And in my view,
8 places like Harvard, bringing people into the center of
9 learning, learning about difference, I don't know how we do
10 that unless we prepare them well and send them out to do just
11 that.

12 **Q.** Let me switch topics slightly and ask you whether you are
13 familiar with the whole person admissions process?

14 **A.** I am.

15 **Q.** What is it?

16 **A.** It is an admission process in which instead of doing a
17 kind of automatic admission based on test scores and GPA and
18 rank in class, that you consider every aspect of what a
19 person brings to a college. You consider their life
20 experience. You consider their cultural origins or their
21 racial origins. You consider what they've done up to that
22 point. You consider what their aspirations are. And you
23 consider whether or not they are intent on contributing
24 something to society. You consider everything.

25 **Q.** At the time that Radcliffe employed you as an admissions

1 officer, did it employ a whole person admissions process?

2 **A.** It did.

3 **Q.** And in your opinion, does this whole person
4 individualized approach to admissions facilitate assembly of
5 a diverse student body?

6 **A.** It did.

7 **Q.** Let's talk about once students are admitted to the
8 college.

9 Did you examine whether Harvard has practices that
10 facilitate diverse interactions on campus?

11 **A.** Yes. My opinion is that they do.

12 **Q.** Can we have, Mr. Lee, can we have Demonstrative 9.11?

13 At a high level, what did you find?

14 **A.** Well, at a high level, I found that in numerous ways
15 Harvard has an intentional process of facilitating
16 interaction among different students.

17 **Q.** And what do these -- what do these segments of the circle
18 on the demonstrative reflect?

19 **A.** In extracurriculars, for example, students participate
20 not just in varsity sports but in club sports and other
21 extracurriculars; like theater or dance or any number of
22 different areas. And when they are doing that, they have the
23 opportunity to spend time with different students from
24 different backgrounds in a common project.

25 I find that in housing, again, the way that housing

1 is assigned is intentionally designed to make sure that
2 students have the best chance of being in a living
3 environment in which they're exposed to difference.

4 And so as I said, the first year they are assigned
5 housing with a roommate not of their choice. After that they
6 are randomly assigned to houses to make sure that that
7 mixture continues. And, again, in terms of faculty and
8 staff, the intentionality extends there where students are
9 given the opportunity to interact with many faculty and staff
10 who come from different backgrounds.

11 **Q.** I must confess, I hope that I'm not imagining this, but
12 did you, in your report, give an example of a particular
13 student housing arrangement, a freshman housing arrangement
14 between a particular white student and a particular
15 African-American?

16 **A.** I think the only mention that I made was with Mark
17 Zuckerberg --

18 **Q.** I didn't imagine it, okay.

19 **A.** -- and his roommate who happened to be a Haitian
20 Olympian, Samyr -- I can't remember his last name, but yes.

21 **Q.** Did you review Dean Khurana's testimony in this court?

22 **A.** I did.

23 **Q.** And is his testimony regarding the practices that Harvard
24 employs to facilitate diversity consistent with your
25 analysis?

1 **A.** It is consistent with my analysis.

2 **Q.** Do you recall Her Honor's question to Dean Khurana about
3 how to measure when there's enough diversity?

4 **A.** I remember that.

5 **Q.** And what is your response to that question?

6 **A.** My response is that wouldn't it be marvelous if we had
7 the capacity to know when enough diversity is enough
8 diversity.

9 I have been doing this work for decades, and I have
10 never seen a moment when we are certain of that. We are
11 constantly striving to make sure that we have the appropriate
12 mix of students. But I don't think there is any university
13 in the country that has decided that it has the key to that.

14 So here is what we do know. We know, because we've
15 been told over the decades by students who have experienced
16 it, that sometimes there are insufficient numbers of a -- of
17 particular groups on the campus for them to feel safe and
18 comfortable and for the learning that they have access to to
19 be equal to that of others on the campus.

20 So we're immensely sensitive to the fact that we
21 can have too few students in a particular group.

22 We also know, from what we've been told by
23 different groups, that our assumptions about diversity are
24 often too unsophisticated. And so we might think that
25 because we have a black student that that's diversity.

1 Whereas, many students will say that you don't have enough
2 black students from a particular socioeconomic class or you
3 don't have enough students, black students, who are wealthy,
4 or you don't have enough black students who come from outside
5 the country.

6 So within different groups, their definition of
7 diversity is somewhat different from ours sometimes, and
8 we've learned over time to be much more variegated in the way
9 that we think about diversity.

10 **Q.** President Simmons, we heard yesterday, all day yesterday,
11 from students and alumni of Harvard.

12 Did you manage to hear any of that testimony?

13 **A.** I heard some of the testimony.

14 **Q.** And do you recall some of the students expressing
15 concerns about inclusion?

16 **A.** I do.

17 **Q.** How do the concerns expressed by the students affect your
18 analysis?

19 **A.** They're very much, as I have heard over the years, and
20 very much in keeping with my thinking about this -- about
21 these questions.

22 **Q.** Are those concerns that we heard expressed yesterday an
23 indication that efforts to have diverse learning environments
24 are failing?

25 **A.** Not at all.

1 **Q.** Let's turn now to the --

2 **A.** May I say a little more about that?

3 **Q.** Yes. You've got the floor -- chair.

4 **A.** One of the things that I wrestle with as a university
5 president is trying to impart to my students the difference
6 between what they are experiencing now and what people
7 experienced decades ago.

8 I want to say that part of what I hear from the
9 students is all too familiar because, of course, I've heard
10 it for so long over the decades. Nevertheless, the fact that
11 they are smarter about it, more aware of it, and in a sense
12 dealing with it so amazingly is, to me, a sign of progress,
13 frankly. And so I just wanted to put that context on it.

14 **Q.** Thank you. Let's turn now to the second of the two
15 questions that Harvard asked you to address.

16 And Mr. Lee, yes, thank you. Demonstrative 9.12.

17 Let's focus on whether the admissions practices
18 that you identified at the outset of your testimony in your
19 opinion serve legitimate institutional interests. And let's
20 start by turning to Demonstrative 9.13.

21 And this, again, if you'd just remind us, these are
22 the practices that you have considered and expressed an
23 opinion about?

24 **A.** Yes.

25 **Q.** Do you agree that Harvard should cease providing what it

1 calls an admissions, quote, tip, to legacies, to applicants
2 whose parents have contributed to Harvard, to children of
3 Harvard faculty and athletes?

4 **A.** I do not.

5 **Q.** And do you agree that Harvard should end early action?

6 **A.** I do not.

7 **Q.** Let's start with legacies. Look at Demonstrative 9.14.

8 What institutional interests are served by
9 considering legacy status?

10 **A.** Our institutions are venerable, I think that's the right
11 word, because they are revered over many, many years by a
12 succession of alumni who come to love our universities and
13 what they provide. It is entirely appropriate for them to
14 believe that it would be wonderful if their children could
15 also enjoy the same benefits that they enjoyed as students.

16 At the same time, because they are so involved with
17 our universities, and do so much for us -- and
18 parenthetically let me say, I do firmly believe that Harvard
19 today would not be Harvard without that involvement: Alumni
20 who are advising Harvard, alumni who are giving to Harvard,
21 alumni who are challenging the university at all times to be
22 better. Without that, Harvard would not be Harvard.

23 And so one of the distinct advantages that we enjoy
24 as institutions is that we've been made stronger by benefit
25 of that involvement. And one of the ways that we signal to

1 alumni how important that is for us is that we consider their
2 children in the context of our admission process never, never
3 to admit them if they are not qualified on the same basis as
4 other students. It's very important to say that.

5 And also, let me say, I hope it's a given that
6 people understand as educators one would never admit students
7 that you think cannot thrive at your institution. It would
8 be considered highly unethical to do so.

9 And so in the admission process, when we're
10 thinking about students and comparing students, our final
11 question is whether or not that student will thrive because
12 they're perfectly capable of doing the work at a high level.

13 And so in that regard, we believe that it is
14 appropriate to give a tip to legacies, and that it is in
15 keeping with the tradition that we have as institutions where
16 there is strong identity of alumni with our institutions.

17 **Q.** Thank you.

18 Let's turn now to item number two. And looking at
19 that, can you explain to the court what institutional
20 interests are served by giving consideration to applicants
21 whose families make a contribution to the university?

22 **A.** Well, first of all, let me say, you'd never, ever admit a
23 student because their family promises a contribution. That
24 would be a quid pro quo. It would be, again, completely
25 inappropriate to do that.

1 Nevertheless, there are occasions when individuals
2 who are prominent, who have expertise, who have all manner of
3 things that they can do to assist the university, might have
4 children apply and, in that regard, if it is possible that
5 their children are highly able and at the same time their
6 parents could make a difference for the institution, I don't
7 believe that it is problematic to admit those students. The
8 number is infinitesimally small. I couldn't even count on
9 one hand the times that I've seen this apply at Brown. But
10 it is certainly possible that there are students who come
11 along whose families can do incredible things for an
12 institution. We are, after all, private institutions.

13 How do we survive from generation to generation, to
14 be 400 years old? I mean, how does one comprehend that? A
15 private institution from era to era that not just survives
16 but becomes stronger in every era. How does that happen? It
17 doesn't happen because we sit on our hands and do nothing.
18 It happens because we are constantly looking for help, from
19 as many different corners as we can find it.

20 **Q.** I just have one clarifying question. You've spoken
21 eloquently about the different types of contributions that
22 parents or family of an applicant might make. Can I assume
23 that you're including, among that panoply, very significant
24 financial contributions? Not a quid pro quo, but either a
25 history of generosity with the university or the prospect

1 that perhaps there will be significant generosity.

2 **A.** If there has been a history of contributions to the
3 university from someone, of course. I can say that at Brown,
4 for example, in a couple of instances people who had made
5 very generous donations to the university who had children
6 apply, not -- not at the same time, we gave special
7 consideration to their children because they were, after all,
8 highly qualified on the basis of the rest of the pool.

9 **Q.** Let me turn to item 3 on the demonstratives.

10 What institutions are served by considering whether
11 the applicant is the child of faculty or staff at the
12 university?

13 **A.** Well, there are a lot of different ways to think about
14 the resources available to universities and every university.
15 I'm in a public university right now. Every university has
16 access to different kinds of resources. One resource that we
17 have is the admission of children of faculty or staff if
18 they're highly qualified. Now, it also must be said that the
19 single most important factor in the quality of a university
20 is faculty quality.

21 The second most important factor in the quality of
22 an institution is faculty quality. I could go on ad
23 infinitum. Faculty are the determination of the standing of
24 a university. They are at the heart of the learning of
25 students also. But the representation of a university

1 depends mightily on what the faculty output is.

2 And so anything we can do to retain the most
3 outstanding faculty, certainly we would have to do. It is
4 our competitive advantage. There is a fierce, fierce battle
5 in this country for faculty, and trying to keep them is very
6 important to us.

7 And so I think it's perfectly legitimate if a child
8 is highly able to admit a faculty child or a senior person
9 staff person's child. Let me say this is very rare. I think
10 that it happens. It's not a significant number in any given
11 class.

12 **Q.** Let me ask you to turn next to athletic achievement.

13 What institutional interests are served by giving
14 what Harvard calls a tip, and I'm going to divide athletes
15 into two categories, first to recruited athletes?

16 **A.** Well, we're in an athletic league. How are we going to
17 field teams to play each other if we don't admit athletes for
18 those teams? You know, there are a lot of people outside the
19 Ivy League that believe -- who believe that we're not serious
20 when it comes to athletics. That's because they've never sat
21 around a table of Ivy League presidents fighting about
22 athletics. We are very serious about athletics.

23 And so, again, one of the defining elements of
24 Harvard is actually, is actually its athletic program and
25 what it does for the campus in terms of building school

1 spirit, what it does when Harvard beats Yale, you know. And
2 when Brown beat Harvard, it was -- it was a holiday, okay?
3 So these are serious matters. They are taken absolutely
4 seriously.

5 And then the other thing that seems to me very
6 important is that the Council of Ivy League Presidents exists
7 for one purpose, and that is to monitor athletics, to make
8 sure there's no funny business when it comes to admitting
9 athletes. And so it is the most regulated athletic
10 competition, in a sense, in the country. Forget the NCAA.

11 Presidents sit on the council to determine whether
12 or not they're following all the guidelines. And
13 importantly, at particular times, the presidents will decide
14 to ratchet up the requirements for athletes.

15 And I know during my time as president of Brown,
16 one of the things that I did was to cut back on the number of
17 recruited athletes in order to make more room for other
18 students in admission. I believe that Harvard did the same
19 thing, actually.

20 So we take athletics seriously, but we believe that
21 it should be very strictly controlled.

22 **Q.** Let me ask you: You've spoken eloquently about the
23 ability and necessity of recruited athletes to allow, for
24 example, Harvard consistently to defeat Yale and Brown -- as
25 a Harvardian I will say surprisingly in somewhat a

1 demoralizing way to beat Harvard. Do talented athletes like
2 this bring value to the campus more generally than just
3 bringing glory?

4 **A.** Of course. Of course they do. I mean, none of us should
5 be cited as unidimensional individuals just because we have a
6 particular talent. And so a cellist, even at the highest
7 level, is not just a cellist. Nor is an athlete just an
8 athlete.

9 And so there have been famous examples of Ivy
10 League athletes who have been incredible leaders, who have
11 been CEOs, who have been in every sense of the word the
12 citizen leaders that Harvard has identified in its mission.

13 **Q.** Let me ask you now about the non-recruited athletes.

14 Do university communities benefit from having avid,
15 skilled, non-recruited athletes on campus?

16 **A.** Absolutely.

17 **Q.** In what way?

18 **A.** And in so many ways. First of all, the average student
19 can find their way to a sport that they love. And as you
20 know, that experience with sport can often lead to a lifetime
21 of enjoyment. And so -- and I was visited recently in my
22 office by the rugby team on my campus, and it was glorious.
23 These -- the men's rugby team, although I had women's rugby
24 also at Smith, games that I couldn't watch. It was too
25 painful to watch them -- but the men's rugby team. And to

1 see them interact as athletes, doing it for the love of it,
2 was exhilarating.

3 They are working alongside individuals to
4 accomplish wins. They're learning about people. They're
5 becoming more disciplined in their lives because, as you
6 know, as educators, we always say that athletes are much
7 better students during the season than outside the season
8 because it lends more discipline to their total endeavors
9 when they do that.

10 So there are a lot of different things that
11 athletes contribute, non-varsity athletes contribute in the
12 environment. And sometimes it's just as much fun watching a
13 club sport as it is a huge varsity athletic event.

14 **Q.** Let's turn finally to early action and the --

15 THE COURT: May I interrupt you for a second?

16 MR. WAXMAN: Sure.

17 THE COURT: I just have a couple of things I've
18 been thinking about and there's really been no one to ask but
19 here you are. We'll see how relevant these things are.

20 But I have been told that these things that we've
21 just discussed, legacy, contributions, children of faculty
22 and staff and athletic achievement, are about 30 percent of
23 each class. And it seems to me, and you can correct me if
24 I'm wrong, that that can be a way to tamp down diversity,
25 right? Like, if all of your legacies are white and all of

1 your donors are white, then the larger that pool is, the less
2 diverse your school population becomes in some ways, right?

3 And I hear you saying that contributors and faculty
4 kids are a small percentages, or should be small percentages,
5 but I haven't seen a breakdown of that. But if you take
6 those things together that I think can be a way of limiting
7 diversity, is there some number that's too much?

8 THE WITNESS: I actually don't think of it that
9 way. And here is why. I've always been involved in my
10 career in the continuum of education. A lot of people focus
11 on one institution, one admission cycle. I didn't, I didn't
12 go to Harvard. I'm not --

13 THE COURT: Neither did I, as has been recently
14 published in the --

15 THE WITNESS: So we can commiserate.

16 THE COURT: That's not the adjective I'd use.

17 THE WITNESS: So here I am, you know, I went to a
18 liberal arts college, 900 black students, and then I became
19 president of an Ivy League university over mostly white
20 students.

21 So the first thing I would say is that one
22 institution does not drive our opportunities, and that's
23 important to remember. Because, as I say, I left to go to
24 Spelman because I thought Spelman had wonderful things to
25 offer. I'm now at Prairie View because Prairie View has

1 wonderful things to offer.

2 So getting back to your question. I believe, truly
3 believe, that the uniqueness of our institutions is actually
4 created by all these factors. It is -- it is a series of
5 things that makes people want to be a part of us. But now
6 people want us to abandon them because it may be inconvenient
7 to have them, or that might be their assessment.

8 I believe that the thing that makes this country,
9 especially higher education in this country, so phenomenal is
10 the fluidity. And so I can go to a 900-student black college
11 that is nowhere on the radar screen for anybody and then end
12 up in a Ph.D. program at Harvard.

13 And so what I used to tell students when I was
14 interviewing them for Harvard, I used to say, you know, you
15 know you can ultimately go to Harvard from lots of different
16 routes. You don't have to be an undergraduate at Harvard.
17 Okay? In fact, it's not always a good idea to go to Harvard
18 as an undergraduate if you're in this field, if you're in
19 that field.

20 So I think our country has become besotted with the
21 idea of getting into a narrow number of institutions. But
22 the great thing that they miss is that our educational
23 opportunities are so much richer than that.

24 And so that's the way I think of it.

25 THE COURT: All right. Another one that might be

1 more unanswerable that I've been sort of wrestling with, and
2 I throw it out there to you because you seem to be the most
3 knowledgeable person I've seen on these subjects, is -- you
4 know, I'm sure that the Supreme Court says you can't have
5 quotas and you can't have floors. So if you're talking about
6 a place -- and I'm going to use Harvard because here we
7 are -- that accepts 2,000 kids a year, looking for 1,600 -- I
8 mean, those two numbers are pretty fixed.

9 THE WITNESS: Yes.

10 THE COURT: Then if we can agree that one black
11 student on campus is not enough and five black students on
12 campus is not enough, if you're trying to get to a number
13 that's enough to meet the goals that you talked about, like a
14 group feeling safe and represented, how do you avoid a floor?

15 THE WITNESS: Well, I think that's because of the
16 selectivity that you have access to.

17 When I was working at Radcliffe, there was a
18 plentiful supply of highly-able students. That's not always
19 true for every university, but it's certainly true for
20 Harvard. And so one of the things, as you look at what
21 you're trying to achieve across the entire university that
22 you're more concerned about, is that if you were to admit a
23 certain number of students, that the whole -- one whole part
24 of your campus would be devoid of any difference. And so it
25 isn't so much a floor as it is an effort to make sure there's

1 sufficient numbers of students in your campus so that the
2 students who need that deep learning are exposed to it. And
3 if it is too small, you'll get the feedback.

4 And one of the reasons that I say that that
5 feedback is important and we've had it over the decades, is
6 that when we first started this process, we had no idea what
7 we were doing. So there were many tokens admitted into
8 programs like this.

9 So, for example, I was a token at Wellesley. And
10 so Wellesley was not admitting African-American students in
11 any significant numbers, and what they did was to go to the
12 South to black colleges and invite black students from black
13 colleges to come to Wellesley. But even when they did that,
14 it didn't make much of a difference because there were so few
15 on the campus.

16 So I think one of the things we've learned over the
17 years, because we've heard the feedback from our students,
18 this is what it feels like when it's like this. And every
19 time we get the feedback, we tend to make adjustments.

20 And so I wrote a report at Princeton, for example,
21 about the consequences of having the -- either the wrong
22 mixture or the wrong policies, and we made adjustments to
23 that.

24 So universities are always trying to make
25 adjustments. I don't ever see this as a fixed point, where

1 we're utterly satisfied that as a nation, we have figured
2 this out. I don't see that happening because we are changing
3 constantly, different demographics are taking place.

4 And so how many of us are floored by what's
5 happening in the country today? I know I am. I didn't
6 expect to see it again. But here we are. And so we'll take
7 that in and we'll make our adjustments and we'll try to
8 improve. And that's the way it's always going to be because
9 when you have so many different people involved, you cannot
10 predict what they are going to do in the future. You can
11 only look at where you are now and try to come up with the
12 best solution.

13 THE COURT: Thank you.

14 MR. WAXMAN: Can I ask one follow-up question to
15 Your Honor's questions?

16 THE COURT: You may.

17 **Q.** I'll be perhaps a little more pointed than the Court was.

18 When you were president of Brown and when you were
19 president of Smith, did those institutions make a concerted
20 effort to value diversity and try and promote a diverse,
21 including racially diverse, learning environment in those
22 institutions?

23 **A.** Of course.

24 **Q.** Did those institutions, do you feel, that in order to
25 evaluate whether you have provided such an institution that

1 it is useful, necessary, or appropriate to identify a
2 particular percentage, like we need to have, I don't know, 20
3 percent African-American?

4 **A.** No, never.

5 **Q.** So how does --

6 MR. WAXMAN: I don't know whether I'm channeling
7 Your Honor's questions but --

8 THE COURT: I'm not sure there's an answer.

9 **A.** See, that's the problem. I have seen institutions with a
10 very different mix of ratios do it successfully, and I've
11 seen institutions with a much larger proportion of certain
12 groups and it's been difficult, if not disastrous.

13 So here is what I tell my students, and this is
14 what I say to all the groups that I speak to scores of times
15 every year. And I always say, Never expect -- Never tell
16 your campuses that there will be a point at which they will
17 be satisfied that we've achieved the right mix of diversity.
18 Never, never issue that promise because you will fail every
19 time.

20 It is not scientific. It just isn't. And so I
21 think what I advise is that you don't pay attention to that
22 point. Here is what you pay attention to. You pay attention
23 to the striving. That's what you pay attention to. In every
24 year in every way, you're still striving to learn about
25 difference. It's the striving that matters. And as long as

1 you're doing that institutionally, and individually, you're
2 making progress undeniably. But if you try to set these
3 false expectations, that there is a magic point at which it's
4 now functioning best, you'll be disappointed.

5 THE COURT: That's the ceiling. What about the
6 floor?

7 THE WITNESS: The floor, again, I don't think of it
8 in terms of a floor. I just don't. I've seen so many
9 circumstances in which small numbers have worked, and I've
10 seen circumstances in which they are alleged not to have
11 worked.

12 You know, we are mired in a situation where all of
13 this is subject to interpretation and reaction and the
14 reaction of many different people. And in such a
15 circumstance, it is impossible to come up with a formula that
16 we're going to be satisfied with.

17 And so I think we'll never get there in terms of
18 that floor. I don't think we'll get there in terms of any
19 ceiling. And I think that this whole idea of keeping
20 ourselves honest by narrowly interpreting what we are doing
21 and consistently doing that is a pretty good way of doing it.

22 I can only say that over a lifetime of trying to do
23 this in lots of different settings, I've never been in a
24 setting where people were satisfied that they were doing it
25 exactly the right way. And that's been a vast array of

1 settings.

2 U.S.C. was right on the edge of the black
3 community, one of those venerated institutions. And when the
4 riots occurred in Los Angeles, the riots went right up to
5 U.S.C. and stopped. And it had nothing to do with the
6 diversity of U.S.C. in terms of numbers. It had to do with
7 the fact that that community respected U.S.C. because of the
8 way U.S.C. had respected its athletes.

9 So there are so many different ways of looking at
10 this.

11 MR. WAXMAN: Over to me?

12 **Q.** Let's turn finally, President Simmons, to number five on
13 the slide, which is the proposal that Harvard eliminate early
14 action.

15 Could you please summarize your opinion about the
16 consequences to private universities like Harvard of
17 eliminating the criticized early action program?

18 **A.** Well, I would say that when Harvard decided not to use
19 this competitive advantage, we were very happy at Brown.
20 Because any advantage we can enjoy in terms of recruiting
21 students, we want that advantage.

22 Early action provides a competitive advantage when
23 it comes to the most sought-after students. And if you -- if
24 you abandon that and don't have access to those students,
25 there are consequences for it.

1 And so as a practical matter, I would say any
2 university that is competing at that top level for the very
3 best students will want to maintain that advantage, and early
4 action is such an advantage.

5 **Q.** I was going to ask you about your experience at Brown and
6 Princeton, but I think you've testified about the
7 consideration at Brown.

8 Did Princeton -- does Princeton offer early action?

9 **A.** It does. It abandoned it for a time and went back to it.
10 And, again, there is a cluster of institutions that compete
11 fiercely.

12 I remember when I was at Princeton, I remember a
13 time at Princeton when Princeton was very annoyed, that they
14 didn't feel they were getting their fair share of the top
15 students who were applying to Princeton, Yale, and Harvard.
16 And they went to work to try to figure out how to overcome
17 what they saw as a deficit.

18 But in regard to early action, they restored early
19 action because those institutions that did abandon it
20 realized that they were giving up a substantial competitive
21 advantage by giving it up.

22 **Q.** President Simmons, did you review Mr. Kahlenberg's
23 contention that early action programs disproportionately
24 benefit white and wealthy students?

25 **A.** Yes.

1 **Q.** Do you agree with him?

2 **A.** Well, I looked at the process by which Harvard reaches
3 out to all income groups, to minorities, and so forth. And
4 perhaps people don't understand this very well, but if you're
5 in a household in my old neighborhood, Bloody Fifth Ward in
6 Houston, Texas, and you are a high-performing student, you're
7 getting information from Harvard in your junior year telling
8 you, "Here are your options for applying." That's how
9 extensive the marketing has become. It wasn't always so.

10 But today, the outreach is aggressive and virtually
11 omnipresent, and so typically students of all incomes will be
12 aware of what their options are.

13 That's not to say that a student who has modest
14 scores and is in the middle of their class will get that.
15 They won't. Because there are lists that are circulated of
16 the highest achieving students, and universities concentrate
17 on those lists and they go after those students.

18 **Q.** Would an average student who is acquitting herself in the
19 middle of the class likely be an appropriate candidate for
20 early action in the institution --

21 **A.** Would never be admitted.

22 **Q.** Let's turn to Demonstrative 9.19.

23 And, President Simmons, can you please summarize
24 your opinion about the consequences to private universities
25 like Harvard of eliminating the criticized admissions

1 practices that we have discussed?

2 **A.** I believe that eliminating the criticized admission
3 practices would undermine the ability of Harvard to continue
4 on its path of outperforming other universities. These
5 practices have been responsible in, I think, large measure
6 for the success that Harvard enjoys today. And if you really
7 admire that success, then undermining it by eliminating these
8 provisions would not make much sense to me.

9 **Q.** In looking at number one on the demonstrative, what is
10 your bottom line on the importance of diversity at Harvard?

11 **A.** It's very hard for me to overstate my conviction about
12 the benefits that flow to all of these areas from a diverse
13 undergraduate student body.

14 I know something about the lack of diversity in
15 one's education. I know what it was like to live in a
16 society where that was the bedrock approach to education. I
17 know what it was like to walk down the streets where random
18 people attacked us or issued slurs because they didn't
19 understand what my community was all about. I understand
20 what it was like for African-Americans in this country not to
21 have access to professions.

22 My father was a janitor, my mother was a maid.
23 They had been sharecroppers, they had few opportunities. I
24 lived through that. I remember it.

25 So to me, the benefits that flow to students is

1 they get a better education, a deeper education, a truer
2 education to deal with what they're going to have to deal
3 with in life.

4 To the institution, it makes for not just an
5 enhanced learning environment but for the opportunity to be
6 unparalleled in their standing because they offer something
7 that is so indispensable for society.

8 And for society, my goodness, I've spoken about the
9 conflicts in society, how deeply they run, how they resurface
10 from time to time. How can we imagine a world in which we
11 are not creating leaders and citizens who have the capacity
12 to mediate those differences? I cannot imagine it. And so
13 it's with great conviction that I say that we must continue
14 to offer diverse undergraduate education to our young people
15 to save our nation.

16 **Q.** I have one final question, President Simmons: Have you
17 ever testified in a trial before?

18 **A.** No, and I hope never to again.

19 MR. WAXMAN: Thank you.

20 THE COURT: Why does everybody say that?

21 THE WITNESS: It's unaccustomed, Your Honor.

22 THE COURT: We could use a little diversity on that
23 perspective.

24 MR. WAXMAN: If I may be so impertinent, has Your
25 Honor ever testified as a witness at trial?

1 THE COURT: Yes, I have.

2 MR. WAXMAN: Maybe that's the diversity. Thank
3 you.

4 THE WITNESS: Thank you.

5 May I go now?

6 THE COURT: No.

7 MR. CONNOLLY: Could we have a few minutes to set
8 up?

9 THE COURT: Yes, of course. You can stand and
10 stretch for a minute if you want while he's getting set up.

11 THE WITNESS: Okay.

12 MR. CONNOLLY: May I approach the witness?

13 THE COURT: Of course, yes.

14 EXAMINATION BY MR. CONNOLLY:

15 **Q.** Good morning, President Simmons.

16 **A.** Good morning.

17 **Q.** My name is Michael Connolly. We met at your deposition
18 in Houston.

19 **A.** Yes.

20 **Q.** Thank you for being here.

21 I want to start by talking about how you formed
22 your opinions in this case. To form the opinions in your
23 reports, you did not conduct any studies or statistical
24 analyses, correct?

25 **A.** No, I didn't.

1 Q. And you also did not talk to anyone currently working in
2 Harvard's admissions office, correct?

3 A. I didn't.

4 Q. Now, in your report, you write about how diversity is
5 important because it helps people overcome bias and
6 stereotypes that we may have; is that correct?

7 A. Yes.

8 Q. I'd like to talk about some of the things you've done in
9 your career to address the issues of bias and stereotype.
10 And you mentioned this morning the report you did for --
11 while you were at Princeton.

12 There you were asked to investigate issues of
13 racial bias on campus and to see whether the university
14 needed to take actions to remedy this, correct?

15 A. Yes.

16 Q. And you wrote a report called "The Report on Campus Race
17 Relations." That contained the findings of your
18 investigation, correct?

19 A. Yes.

20 Q. And it contained a number of recommendations for how
21 Princeton could address the concerns of bias and stereotypes
22 that many minority students had expressed to you, correct?

23 A. Yes.

24 Q. And the report that you wrote has been widely cited
25 around the country, correct?

1 **A.** I think so.

2 **Q.** Now, later in your career, while you were the president
3 of Brown, you served on a committee that was charged with
4 examining why women faced barriers being hired and promoted
5 in the science and engineering departments at colleges and
6 universities; is that correct?

7 **A.** Yes, it is.

8 **Q.** And the committee that was created was created by the
9 National Academies of Sciences, Engineering and Medicine,
10 correct?

11 **A.** That's correct.

12 **Q.** Now, the National Academies is an organization that has
13 members who are the top performer scientists in medicine,
14 science and engineering, correct?

15 **A.** Yes. The Academies.

16 **Q.** The Academies.

17 And the Academies regularly work on policies to
18 improve the fields of science, engineering, and medicine,
19 correct?

20 **A.** That's correct.

21 **Q.** And the Academies committee did issue a report, correct?

22 **A.** It did issue a report, correct.

23 **Q.** And that report was called "Beyond Bias and Barriers,
24 Fulfilling the Potential of Women in Academic Science and
25 Engineering," correct?

1 **A.** Yes.

2 **Q.** Now, your committee put together a PowerPoint
3 presentation summarizing some of the findings, correct?

4 **A.** I actually don't recall a PowerPoint presentation. I
5 recall a report.

6 **Q.** Well, it's been a while, so I've included the PowerPoint
7 in the binder. You can refresh your recollection. It's on
8 Tab C108.

9 THE COURT: Mr. Connolly, do you have an extra copy
10 of that binder, please?

11 **Q.** And we can also put it up on the screen if that's easier
12 for you.

13 So there's the title that we just mentioned. And
14 if you turn to the second page, it's the first tab you see.
15 It lists the people that served on your committee. About
16 two-thirds of the way down, there's your name, Ruth Simmons,
17 correct?

18 **A.** That's correct.

19 **Q.** And you were the president of Brown University when you
20 served on this committee, correct?

21 **A.** Yes.

22 **Q.** And the chair of the committee was Donna Shalala,
23 correct?

24 **A.** Yes.

25 **Q.** And I see a number of people on here, professors from

1 Berkeley and Harvard and Duke, Yale, MIT. They served on the
2 committee with you, correct?

3 **A.** Yes.

4 **Q.** Now, if you turn to the second red tab. I'll also put
5 this up on the screen for you.

6 Now, your committee --

7 MR. WAXMAN: Your Honor, I don't think there's a
8 foundation yet to ask this witness a question. I believe
9 that she earlier testified that she didn't recall a
10 PowerPoint. And I think if counsel wants to ask her about
11 pages in the PowerPoint, he has to establish that, in fact,
12 she did see this.

13 MR. CONNOLLY: I'm not trying to admit this in
14 evidence. It was a PowerPoint that accompanied her report.
15 I'm just using it to, sort of as an aid to walk through
16 questions with her.

17 THE COURT: All right. So he's trying to refresh
18 her recollection.

19 But why don't you ask her about the substance of
20 what's on the slide rather than the slide itself.

21 MR. CONNOLLY: Sure.

22 **Q.** Did your committee find that a substantial body of
23 evidence establishes that most people, men and women, hold
24 implicit biases?

25 **A.** I don't remember the exact language that way, but we

1 certainly discussed bias in academic life as with regard to
2 women.

3 **Q.** And do you -- so you do not recall in particular whether
4 the committee found that a substantial body of evidence
5 establishes that most people, men and women, hold implicit
6 bias?

7 **A.** Again, that's very specific. This has been many years
8 ago, and I don't remember that language from the report.

9 **Q.** Okay. So I also have a copy of the executive summary of
10 the report in your binder. It is identified as P450. You
11 can turn there to refresh your recollection.

12 **A.** 450?

13 **Q.** Mm-hmm. Will you turn to page 4 in the report. You see
14 the bottom right paragraph starting with "A substantial body
15 of evidence"?

16 **A.** Okay, number five.

17 **Q.** Number five, yeah?

18 **A.** I see that.

19 **Q.** If you could read that paragraph. It starts there and
20 then finishes onto the next page.

21 Just let me know when you're finished.

22 **A.** You want the whole paragraph?

23 **Q.** Not aloud but just to yourself to refresh your --

24 **A.** Just to myself.

25 **Q.** -- recollection about what your committee found.

1 MR. WAXMAN: Your Honor, if I can just ask that
2 since the witness is not being examined about the PowerPoint
3 that the slide be blanked, the screen be blanked.

4 THE COURT: Why don't you take the slide down,
5 Mr. Connolly.

6 A. I've finished.

7 Q. Okay. Thanks.

8 Now, after reading a summary of what your committee
9 found, would you now agree that your committee found that a
10 substantial body of evidence establishes that most people,
11 men and women, hold implicit biases?

12 A. It's apparent that that's what the committee found. I
13 didn't write the report. The staff wrote the report, but
14 that's in their committee report.

15 Q. And you served on the committee, correct?

16 A. I did.

17 Q. And the report of the committee reflects the findings of
18 the committee, correct?

19 A. Let me describe how it works.

20 When a committee of this kind does this work, there
21 is usually a staff that collects the information, writes the
22 report, and the committee as a whole reacts to what the draft
23 is. And so that might mean some of the things in the
24 committee report I agree with and some things I might not
25 agree with but that the majority might have agreed with.

1 So that's the way it actually works.

2 So in terms of bias, I certainly would agree that
3 many people hold biases and that it did affect the process
4 with regard to women in science and engineering. But I don't
5 make broad statements about implicit bias.

6 **Q.** If you could turn back one page to page 3. Read the
7 bottom -- the first sentence of the bottom right paragraph
8 starting out with -- and just, again, read it to yourself to
9 refresh your recollection -- starting out, "The report
10 presents the consensus views." Just read the first sentence
11 to yourself.

12 **A.** (Witness reviews document.) I've read it.

13 **Q.** Now, again, would you agree that the report here, at
14 least according to the report, presents the consensus views
15 and judgment of the committee members?

16 **A.** Consensus.

17 **Q.** All right. Now, would you also agree that what your
18 committee found, the consensus views of the committee, was
19 that decades of cognitive psychology research reveals that
20 most of us carry prejudices of which we are unaware but that
21 nonetheless play a large role in our evaluations of people
22 and their work? Would you agree that that is what the
23 committee report found?

24 **A.** Yes, I thought we just said that.

25 **Q.** And would you also agree that the committee found that

1 every study that the committee evaluated found a significant
2 effect of bias based on the gender or race of the person
3 being evaluated?

4 **A.** I don't think it was framed that way. But -- would you
5 say that again?

6 **Q.** Do you recall your committee finding that every study
7 that you examined, there was a significant effect of bias
8 based on the gender or race of the person being evaluated?

9 **A.** Oh, being evaluated.

10 **Q.** Yes.

11 **A.** Yes.

12 **Q.** Okay. And did your committee also find that there was --
13 there was no significant effect of the gender or race of the
14 person doing the evaluation?

15 **A.** Repeat that.

16 **Q.** In other words, your committee did not find that bias
17 against women in the fields of science and engineering was
18 isolated to one race or one gender, correct?

19 **A.** I don't remember that discussion at all in terms of
20 relating to race or gender. I think at first you mentioned
21 gender and not race, but I don't recall a discussion of the
22 bias of women, for example, no.

23 **Q.** You don't recall a discussion of bias of women from what
24 your committee found. Is that -- I'm sorry, I don't
25 understand.

1 **A.** I don't recall focusing on the bias of women in the
2 report. It's been some time since I was part of this
3 committee.

4 **Q.** Okay. And after your committee found -- made these
5 findings, one of the recommendations your committee made was
6 that university leaders should educate all faculty members
7 and students about unexamined bias and effective evaluation;
8 is that correct?

9 **A.** Yes.

10 **Q.** Okay. Now, one of the other things your committee found
11 was that there were many women qualified to be professors in
12 the science and engineering departments, correct?

13 **A.** Yes.

14 **Q.** And despite this large number of highly qualified women,
15 they were underrepresented in the science and engineering
16 departments of many universities in this country, correct?

17 **A.** Yes, I believe so.

18 **Q.** And one of the reasons these highly qualified women were
19 failing to advance is that they faced bias and discrimination
20 in the science and engineering departments of universities
21 when it came to hiring and promotion, correct?

22 **A.** I would say one possible reason was that. That's not the
23 only reason.

24 **Q.** Again, could you turn to page 4 of the report that I have
25 in front of you.

1 Read the paragraph numbered four, just the very
2 first sentence.

3 **A.** "Women are very likely to face discrimination in every
4 field of science and engineering."

5 **Q.** And you would agree that is what your committee found,
6 correct?

7 **A.** Yes, but that's not what I said.

8 **Q.** Okay. Now, at your deposition we talked about some of
9 the conclusions that you've formed and you've reached about
10 bias and stereotypes, and you believe that people can develop
11 biases through the ways in which they are socialized,
12 correct?

13 **A.** Yes.

14 **Q.** For example, we can develop biases from our parents, from
15 the communities we grow up in, and through the things that we
16 endure through our lives, correct?

17 **A.** That's correct.

18 **Q.** In fact, you've said before that we all have biases,
19 correct?

20 **A.** Yes.

21 **Q.** But the fact that we grow up in a certain way, that we're
22 conditioned in a certain way, that we experience life in a
23 certain way doesn't mean that we are held to that for all
24 times, correct?

25 **A.** Correct.

1 Q. There are ways for us to overcome biases, correct?

2 A. Yes.

3 Q. And one of the ways to overcome bias is through education
4 and training, correct?

5 A. Yes.

6 Q. And this is because through education and training,
7 people can overturn the conditioning that they receive as a
8 consequence of their lived experience?

9 A. I'm not sure that I use the term -- are you quoting me
10 when you say "training"? Are you quoting from my deposition?

11 Q. Let me -- this doesn't -- let me just ask you if this is
12 what --

13 A. Could you just tell me whether that that's -- I don't
14 have it in front of me. Are you reading a quote from my
15 deposition? Because I don't recall saying "training."

16 Q. I am reading part of a quote from your deposition.

17 A. Well, what specifically did I say in my deposition?

18 Q. I believe --

19 A. Okay. That's okay. I thought you had it in front of
20 you.

21 Q. I'll move on.

22 A. Okay.

23 Q. Last question on the subject. You believe that
24 interrogation about our biases is a lifelong process for all
25 of us, correct?

1 **A.** Yes.

2 **Q.** Okay. So I'd like to turn to how Harvard treats
3 applicants who are the children of Harvard alumni, what we
4 also know to be legacy applicants.

5 **A.** Okay.

6 **Q.** Now, you support Harvard's decision to give legacy
7 applicants a preference or a tip in the admissions process,
8 correct?

9 **A.** I do.

10 **Q.** And you also --

11 **A.** Obviously not all legacy applicants.

12 **Q.** I'm sorry, I didn't catch that?

13 **A.** Not all legacy applicants, but the applicants that are on
14 a par with the top of the pool.

15 **Q.** You also believe that if Harvard eliminated the
16 preferences or tips that it gives to the children of alumni,
17 that fewer people would donate to Harvard, correct?

18 **A.** I personally believe so, yes.

19 **Q.** Now, in your report, you cite a study from Coffman,
20 O'Neil and Starr. It's entitled "Empirical Analysis of
21 Legacy Preferences on Alumni Giving At Top Universities,"
22 correct?

23 **A.** I don't have it in front of me, but okay.

24 **Q.** Sure. Well, I'll put it up on the screen for you.

25 **A.** Okay.

1 **Q.** This is the -- this is your rebuttal report on page 6.
2 It's also in your binder.

3 **A.** Oh, it is. Okay.

4 **Q.** I'm referencing the Coffman study. You write, "It finds
5 that schools with legacy preferences on average have 35.7
6 percent higher alumni giving than non-legacy preference
7 schools before controlling for family wealth. The study also
8 acknowledges that its model suggests that abolishing legacy
9 preferences would have a deleterious impact on the finances
10 of universities that currently consider legacy status in
11 admissions. In my opinion, such an outcome would be harmful
12 for many private universities whose financial resources
13 affect their ability to sustain the excellence of their
14 offerings and provide resources for low-income students of
15 all races to afford the costs of their education."

16 That is what you wrote, correct?

17 **A.** Yes.

18 **Q.** Now I'd like to turn to look at the rest of the Coffman
19 study, and that is also in your binder at Defendant's Exhibit
20 132. I believe it's the first one.

21 If you turn to page 114 and see the quote from your
22 brief, "The coefficient of 0.357 implies that schools with
23 legacy preferences, on average, have 35.7 percent higher
24 alumni giving than non-legacy preference schools before
25 controlling for wealth. But the authors continue and what

1 they write is, 'What does this tell us?' This suggests that
2 schools with legacy preferences have higher alumni giving,
3 but it can be explained entirely by the wealth of their
4 admitted students. The fact that legacy preference schools,
5 on average and holding all else equal, have wealthier
6 admitted students is consistent with the notion that elite
7 schools achieve higher giving simply by selecting
8 disproportionately from families of their own wealthy alumni,
9 not that giving legacy preferences somehow changes giving
10 behavior."

11 Did I read that right?

12 **A.** Yes.

13 **Q.** And the authors continue further down on page 115. And
14 they wrote, "Thus, it is not that these elite institutions
15 are simply lucky enough to have wealthier families in their
16 student body; instead, the preference policy itself allows,
17 contributes to, and perpetuates overselection from the upper
18 class. Once we control for whatever wealth differences there
19 are, whether exogenous to the selection process or exogenous
20 to the applicant pool, there is no evidence suggesting legacy
21 preference policies contribute to greater giving."

22 Did I read that right?

23 **A.** Yes.

24 MR. CONNOLLY: Thank you. No more questions.

25 MR. WAXMAN: If those hearsay statements are being

1 offered for the truth, we object. Obviously he's done an
2 accurate reading of those two sentences.

3 THE COURT: They haven't been admitted at all.

4 MR. CONNOLLY: This is a study that she relied on
5 in her report and I'm asking her questions about it.

6 THE COURT: It's fair game to ask her about it, but
7 I think he's objecting to their admission and they haven't
8 been admitted.

9 MR. WAXMAN: I just will correct the record.

10 MR. CONNOLLY: And that's fine. We're not seeking
11 to admit.

12 THE COURT: Okay.

13 MR. WAXMAN: This is not a study that she offered
14 in her report. This is a study relied upon by Mr. Kahlenberg
15 to which she responded.

16 MR. CONNOLLY: And we read into the record what she
17 said about the report, so I think it's clear.

18 THE COURT: Yes.

19 MR. CONNOLLY: Thank you.

20 THE COURT: Redirect?

21 MR. WAXMAN: No, thank you.

22 THE COURT: Now you are excused.

23 THE WITNESS: Thank you, Your Honor.

24 THE COURT: So we're early for the lunch break.
25 Do you want to start on your next witness? Do you --

1 MR. WAXMAN: Sure. I mean, if -- needless to say,
2 I haven't had the opportunity to confer with anybody about
3 anything, but I think we can probably get started. I mean,
4 other than Your Honor.

5 MR. LEE: He has our permission if he has your
6 permission.

7 MR. WAXMAN: It will take us a couple of minutes to
8 set up. Among other things I need to retrieve the book that
9 has my list of questions.

10 Your Honor, just one -- I know it's housekeeping, I
11 don't know if it's housekeeping, technical issue. Professor
12 Card has even an older back than Your Honor and has asked
13 that if at some point in discussing --

14 THE COURT: That seemed very backhanded somehow.
15 Even older than me.

16 MR. WAXMAN: I'm sorry. Professor Card himself, to
17 a point that we will testify about, has described himself as
18 on the bubble of retirement and has asked -- we've procured a
19 lapel mic and asked whether if periodically during his
20 testimony we have a large projection screen that has -- that
21 displays what is also on the screens, if he can stand up at
22 appropriate points to illustrate his testimony.

23 THE COURT: That's fine. Even if he wasn't even
24 older than me, that would be fine.

25 MR. WAXMAN: That was an unforced error.

1 THE COURT: Agreed.

2 (DAVID CARD duly sworn by Deputy Clerk.)

3 COURTROOM CLERK: Can you please state your name
4 and spell your last name for the record.

5 THE WITNESS: My name is David Card, C-A-R-D.

6 EXAMINATION BY MR. WAXMAN:

7 Q. Good morning, Professor Card. Have you been retained as
8 an expert by Harvard in this case?

9 A. I have, yes.

10 Q. And what is your current position?

11 A. I'm the class of 1950 professor at U.C. Berkeley.

12 Q. And what is your educational background?

13 A. I got my undergraduate degree in Canada at Queens
14 University in 1978, and I completed my Ph.D. at Princeton.
15 The degree was awarded in 1983.

16 Q. And what is your field of specialization?

17 A. Labor economics.

18 Q. And what courses do you teach?

19 A. For undergraduates I teach advanced econometrics and for
20 graduate students I teach topics in labor economics.

21 Q. What is econometrics?

22 A. Econometrics is the application of statistical methods to
23 problems in economics, generally.

24 Q. And what is labor economics?

25 A. Labor economics is the field of economics that deals with

1 individual decision-making, mostly how people make choices
2 over things like what job to take, what level of education to
3 get. So it deals broadly with issues of wages,
4 discrimination, immigration, things like that.

5 **Q.** Has your research been published?

6 **A.** Yes, I have over 100 book chapters and publications.

7 **Q.** And have you published any work focused on
8 discrimination?

9 **A.** Yes. So over the course of my career, I've written a
10 number of articles on both gender discrimination and race
11 discrimination issues.

12 **Q.** Have you also published a study of the effects of
13 race-conscious admissions?

14 **A.** I did one study of that, yes.

15 **Q.** Please turn to Tab 48 of Volume 2 and take a look at what
16 has been marked as Defense Exhibit 133.

17 Do you recognize that document?

18 **A.** Yes.

19 **Q.** And what is it?

20 **A.** It's my CV as of December 2017.

21 MR. WAXMAN: Your Honor, we offer Defense Exhibit
22 133.

23 MR. MORTARA: No objection, Your Honor.

24 THE COURT: It's admitted.

25 (Defendant Exhibit 133 admitted into evidence.)

1 **Q.** Professor Card, since the time of your report, have there
2 been any significant changes in your CV?

3 **A.** I've stepped down, my term as director of labor studies
4 program at the NBR ended. And I've had a number of new
5 publications and new working papers and so on, yeah.

6 **Q.** Please turn to page 2 of Defense Exhibit 133, and if we
7 could have this highlighted, Mr. Lee.

8 Does this fairly list your professional
9 accomplishments, awards, and publications? I guess we only
10 have the awards and prizes first.

11 Does that fairly list the awards that you've
12 received for your professional work?

13 **A.** Yes, some of them, yes.

14 **Q.** Now, we've heard quite a bit already about the John Bates
15 Clark Prize. So let me focus you on the Frisch Medal and ask
16 you if you can explain what the Frisch Medal is.

17 **A.** The Frisch Medal is an award that's given every second
18 year for a paper published in the Journal of Econometrica,
19 which is, I guess, the foremost journal for research studies
20 in econometrics, and I won that award with my coauthor, Dean
21 Hyslop, in 2005.

22 **Q.** And what is the IZA Prize in Labor Economics?

23 **A.** Well, IZA is a research institute in Germany, a large
24 institute, and the Prize in Labor Economics, it specializes
25 in labor economics. And the prize is an award they give

1 every year, sort of a lifetime achievement award, I guess.
2 And I won that award with Alan Krueger in 2006.

3 **Q.** Have you ever testified in a trial before?

4 **A.** No, I have not.

5 MR. WAXMAN: All of my expert witnesses.

6 THE COURT: I know. They're all happy to be here,
7 too.

8 **Q.** And what were you asked to do, Professor Card, as an
9 expert in this case?

10 **A.** I was principally asked to look at four main questions.

11 **Q.** And have you prepared a set of demonstratives to assist
12 you in your testimony today?

13 **A.** I have, yes.

14 **Q.** So let's look first at Demonstrative 10.2, and let me
15 have you explain what questions you were asked to address.

16 **A.** So the first question is whether statistical evidence
17 supports the plaintiff's claim that Harvard discriminated
18 against Asian-American applicants.

19 THE COURT: Can I stop you?

20 Do I have this? Is it in one of the binders?

21 MR. WAXMAN: Have I not given a set of
22 demonstratives to the court? You certainly should and you
23 will.

24 THE COURT: Old people like me do better with
25 paper.

1 MR. WAXMAN: Somebody even older than Your Honor
2 will provide it.

3 THE COURT: If there is such a person in the
4 courtroom.

5 Is it in one of the binders?

6 MR. WAXMAN: Yes, it's in a binder.

7 THE COURT: One of the binders I have?

8 MR. WAXMAN: I believe we provided it to Karen.

9 COURTROOM CLERK: Yes, I gave it to her.

10 MR. LEE: Tab 63.

11 MR. WAXMAN: And we're at Tab 63. Tab 63 has all
12 the demonstratives.

13 THE COURT: Excellent. Thank you.

14 **Q.** So what questions were you requested to address?

15 **A.** The first was whether statistical evidence supports the
16 plaintiff's claim that Harvard has discriminated against
17 Asian-American applicants in its admissions decisions.

18 The second question was to what extent does race
19 affect admissions decisions at Harvard.

20 The third question is, is there statistical
21 evidence that Harvard has engaged in racial balancing.

22 And the fourth question I was asked to examine, how
23 Harvard's admitted class would change if it were to eliminate
24 the consideration of race and pursue some of the race-neutral
25 alternatives that have been proposed.

1 **Q.** Now, Professor Card, we're going to be spending some
2 considerable time examining your analysis on each question.
3 But can we begin by just asking at a high level what you
4 concluded with respect to each?

5 **A.** Yes.

6 So with respect to the first question, my
7 conclusion is that the statistical evidence does not support
8 the claim that Harvard has discriminated against
9 Asian-American applicants.

10 With respect to the second question, my conclusion
11 is that race is a factor in admissions at Harvard. It's one
12 of the factors that is valued in some candidates. It has a
13 comparable effect to other positive tips or awards that
14 Harvard gives or preferences that Harvard gives to different
15 students. And it's never a situation where race alone is
16 individualistically determinative of a student's admission.

17 On the issue of racial balancing, my conclusion is
18 there's no statistical evidence that Harvard has engaged in
19 racial balancing.

20 And finally on the issue of race-neutral
21 alternatives, my conclusion, which is very consistent with
22 large existing research data, is that Harvard, if it were to
23 eliminate directly the consideration of race and use
24 race-neutral alternatives, it would face a trade-off in that
25 using race-neutral alternatives would necessarily, to achieve

1 higher levels of diversity close to or roughly similar to the
2 levels of a diversity, it would involve a reduction in the
3 quality of the class.

4 So there's a trade-off there.

5 **Q.** Dr. Card, were you here for Dr. Arcidiacono's testimony?

6 **A.** I was, yes.

7 **Q.** Did you hear him testify about a, quote, Asian penalty?

8 **A.** Yes.

9 **Q.** What did you understand him to mean by "penalty"?

10 **A.** Well, my interpretation of what he was saying is that
11 there are really three components of that. The first
12 component is that if there is, in the admissions process, if
13 there is, for example, a positive preference for, say,
14 Hispanic and other types of people in the admissions process,
15 that that necessarily is a disadvantage or discrimination
16 against Asians and, I guess, non-Hispanic white candidates.
17 So that was one component of what he said.

18 The second was he was directly asserting that
19 relative to white applicants, white domestic applicants,
20 Asian-American applicants face a negative disadvantage in
21 admissions.

22 And the third assertion I think he was making was
23 that the mechanism for that was largely through
24 discrimination or negative assessment of the personal rating
25 of Asian-Americans.

1 **Q.** Do you agree with him?

2 **A.** No, I disagree on all three issues.

3 **Q.** Why not -- or why?

4 **A.** Well, first, with respect to the issue of a positive
5 benefit for one, say, underrepresented minority group is
6 equivalent to a negative discrimination or discrimination
7 against other groups, I disagree with that. I don't think
8 that's the right way to think of the issue, and I certainly
9 don't think that's the way that Harvard does it.

10 The way they're thinking of it is there's a way for
11 well-qualified candidates who have a level of academic
12 qualification and extracurricular qualifications and so on,
13 for those candidates race then can be an additional tip; just
14 like being an accomplished musician can be a tip or being
15 from a sparse country, as the dean would say the other day,
16 or having, say, a strong athletic record.

17 And so I don't think it's appropriate to think of
18 there being discrimination against people who don't play the
19 cello as well as Yo-Yo Ma just because Yo-Yo Ma is so
20 accomplished in that. And similarly, I don't think it's
21 appropriate to think of a positive benefit for an
22 underrepresented group as necessarily representing negative
23 discrimination against others.

24 Secondly, on the issue of the difference between
25 Asian-American applicants and white applicants in the

1 admissions rates, I think that the statistical evidence is
2 very clearly not a showing of evidence of discrimination.
3 And I think a proper analysis of the overall admissions
4 procedure does not show that.

5 And finally, with respect to personal rating, I
6 also think that an evaluation of all of the evidence,
7 including the other ratings that are awarded, and a
8 consideration of all of the available evidence definitely
9 does not support the claim that there's discrimination in the
10 personal rating.

11 **Q.** Let's turn to the work that you did in this case.

12 Did you review documents and data about Harvard,
13 the Harvard admissions process in the course of forming your
14 opinions?

15 **A.** I did, yes.

16 **Q.** What did you review?

17 **A.** Well, I started with a lot of material that Harvard uses;
18 for instance, training admission officers. There's publicly
19 available material on the Internet about their admissions
20 process. By the time I was working on my report, some of the
21 admissions officers had already been deposed, and so I read
22 some of those depositions.

23 So I looked at that kind of material.

24 **Q.** Did you also examine data from the Harvard admissions
25 database?

1 **A.** I did. I was given access to data for a series of
2 classes, admissions classes for the classes of 2014 to 2019.
3 And these data are coming from the NEVO database that Harvard
4 uses to store information and process it about the
5 characteristics of admitted applying students.

6 **Q.** Did you also evaluate material that had been provided to
7 you or provided in this litigation from the college board?

8 **A.** Yes.

9 So an additional supplemental set of data comes
10 from the college board, and that contains a lot of background
11 information about the schools and neighborhoods of the places
12 where the students are coming from who are in the application
13 database.

14 **Q.** Now, over the course of my examination of you, we're
15 going to be reviewing a range of data regarding Harvard
16 admissions, correct?

17 **A.** Yes.

18 **Q.** And some of the data is going to relate to racial groups.

19 Do you understand that?

20 **A.** Yes.

21 **Q.** And to be clear, we're going to be looking at average
22 group data, correct?

23 **A.** Yes, by nature of a statistical analysis, I'll be
24 reporting data about averages of differences between groups,
25 for example.

1 **Q.** But does the data itself show variation among individuals
2 within any particular group?

3 **A.** Yes, certainly. In fact, there's enormous variation
4 within any of the groups, within any racial group. So
5 there's, in fact, substantially more variation within, say,
6 the white population or the Asian-American population than
7 there is in the small difference between their averages.

8 **Q.** So if I refer to any racial group, will you understand me
9 to be referring to average group data?

10 **A.** Yes.

11 **Q.** And will you understand I'm not referring to every single
12 individual, just the average group data?

13 **A.** Yes, certainly.

14 **Q.** Please turn to Tab 1 in Volume 2 of your binder, which is
15 Exhibit 669. What is this document?

16 **A.** This is an exhibit that shows the number of domestic
17 applicants per year in the database that both Professor
18 Arcidiacono and I analyzed, the number of admitted students
19 and average admission rate.

20 **Q.** Is this a summary that you created?

21 **A.** Yes.

22 **Q.** Did you prepare this summary using data extracted from
23 Harvard's admission database?

24 **A.** Yes.

25 **Q.** And is that data maintained in the ordinary course of

1 Harvard's business, to your knowledge?

2 **A.** Yes.

3 **Q.** Approximately how many fields of data did you analyze
4 from Harvard's database?

5 **A.** Well, certainly I would say over 200 because there's 200
6 variables used in most of my models.

7 **Q.** Did you rely on this summary in forming your opinion in
8 this case?

9 **A.** Yes, I certainly did.

10 **Q.** Does this summary fairly and accurately reflect your
11 review and analysis of the data we've discussed?

12 **A.** Yes.

13 **Q.** Now, over the course of your examination, will we be
14 looking at other summary exhibits?

15 **A.** Yes, quite a few.

16 **Q.** I may ask you these tedious questions again, but does
17 each reflect your review and analysis of the Harvard
18 admissions data?

19 **A.** Yes.

20 MR. WAXMAN: Your Honor, we offer Defense Exhibit
21 669.

22 MR. MORTARA: No objection.

23 THE COURT: It's admitted.

24 (Defendant Exhibit 669 admitted into evidence.)

25 **Q.** Professor Card, please turn to Tab 3 in Volume 2.

1 Do you see defense Exhibit 671?

2 **A.** Yes, I do.

3 **Q.** What is it?

4 **A.** So this is an exhibit, number of applicants to the class
5 of 2019.

6 MR. WAXMAN: Your Honor, we offer Defense
7 Exhibit 671.

8 MR. MORTARA: No objection, Your Honor.

9 THE COURT: It's admitted.

10 (Defendant Exhibit 671 admitted into evidence.)

11 **Q.** Please turn to Volume 4, Professor Card, and look at
12 Defense Exhibit 672.

13 Do you have that?

14 **A.** Yes.

15 **Q.** What is it?

16 **A.** It's a tabulation, applicants and admitted students by
17 profile ratings combinations.

18 MR. WAXMAN: Your Honor, we offer Defense
19 Exhibit 672.

20 MR. MORTARA: Also no objection, Your Honor.

21 THE COURT: Admitted.

22 (Defendant Exhibit 672 admitted into evidence.)

23 **Q.** Let's look, Professor Card, at Defense Demonstrative
24 10.3.

25 What is this showing?

1 **A.** So this is data for the class of 2019 admittees, and this
2 is some characteristics of the applicant pool, so that -- the
3 set of students who have applied, and what I'm showing is an
4 extremely important characteristic of the applicant pool at
5 Harvard.

6 The applicant pool at Harvard, as I think everyone
7 knows, is extremely well qualified, but in particular,
8 they're extraordinarily well qualified on academic
9 dimensions.

10 And so for benchmark purposes, the green line along
11 the axis shows the number of domestic admitted students in
12 the class of 2019. So that was 1,756 students in total. And
13 just to understand the overwhelming abundance of academic
14 excellence, for that class, there was 2,741 students who had
15 a perfect SAT verbal score. There was 3,450 who had a
16 perfect SAT math score, so roughly twice as many as there
17 were total domestic slots. There was around 8,200 who had a
18 perfect GPA. And there would be something around 5,000
19 students who would be in the top two deciles of what
20 Professor Arcidiacono was calling the academic index, which
21 is an index of SAT and GPA and class rank. And that would be
22 equivalent to students who essentially have nearly perfect
23 SATs and nearly perfect GPAs and so would be considered on
24 the basis of SAT and GPA to be extremely highly accomplished.

25 **Q.** Professor Card, let's turn to Demonstrative 10.4. And

1 can you please explain to the court what this shows?

2 **A.** Yes. So this is now showing on average across the six
3 admission cycles that I'm going to be talking about
4 extensively, this is showing the fraction of students on
5 average who achieve a rating of 1 or 2 on each of four key
6 dimensions.

7 So key dimension one would be their academic
8 rating; second would be their extracurricular rating; third
9 would be their personal rating; and fourth would be their
10 athletic rating.

11 So these are the profile ratings that we've heard a
12 lot about in the case so far.

13 And just as a reminder, 1 or 2 is actually quite a
14 high level of accomplishment. A 1 is an extremely high level
15 of accomplishment, but 2 is very, very solid. I'm not sure I
16 would have ever gotten any 2s myself.

17 So this shows that in this on average amongst all
18 of these four dimensions of strength, I'm going to call these
19 strengths, these four dimensions of strength, academic
20 strength is by far the most common dimension of strength. So
21 42 percent, roughly, of all applicants to Harvard, all
22 domestic applicants, have an academic 1 or 2, which means
23 they're extremely well qualified academically.

24 By comparison, the other three attributes are much
25 less common. So only 24 percent have an extra-curricular 1

1 or 2. Only 21 percent have a personal 1 or 2, and only
2 around 10 percent have an athletic 1 or 2.

3 So emphasizing the relative abundance of academic
4 strength, there are substantially more students who are
5 highly qualified on an academic dimension than on these other
6 dimensions.

7 And I should say this is not to say that these are
8 the only dimensions of strength that Harvard cares about.
9 These are just the four profile ratings. There are, of
10 course, other dimensions of strength like extraordinary music
11 skill or things like that that would be on top of this.

12 **Q.** How does the abundance of academic strength affect
13 Harvard's admissions process?

14 **A.** Well, in my view, it's really one of the most important,
15 if not the most important thing, to understand about the
16 admissions pool at Harvard, and also to understand this case.

17 Because one can see by the previous slide, for
18 example, if one was just focusing on SAT and GPA, there's
19 just an incredible numbers of students with virtually perfect
20 scores and virtually perfect GPAs. So academic strength is
21 not really sufficient to distinguish amongst this huge pool
22 of academically qualified students, and that's not what they
23 do. Instead, what they're looking for is students who have
24 multidimensional strengths. A student who is well-qualified
25 academically but in addition has extracurricular strength and

1 a personal strength, and, if possible, athletic strength.

2 So they're looking for what I would call a
3 multidimensional accomplishments.

4 **Q.** How much of the Harvard applicant pool is strong on
5 multiple dimensions?

6 **A.** A relatively low fraction. Something like only 7 percent
7 have actually got a 1 or 2 on three of these categories. So
8 the relative importance of that is quite low.

9 MR. MORTARA: Your Honor -- Your Honor, I don't
10 want to be interrupting Mr. Waxman's examination. Subject to
11 the discussion that we had earlier, about wedges and noses,
12 I'm going to not object to this. I'll let you know when I'm
13 going to have an objection, if that's okay.

14 THE COURT: Okay.

15 MR. WAXMAN: Is this the camel's nose?

16 MR. MORTARA: I think it was a nose in the tent and
17 a wedge in a door.

18 MR. WAXMAN: Got it. Okay.

19 **Q.** Looking at Demonstrative 10.5, what does this show?

20 **A.** So this is more of a complete characterization of the
21 applicant pool. So it's a bit confusing because there are
22 applicants and admissions and admitted pools and so on. So
23 this is the overall number of people who apply to Harvard,
24 domestic applicants over these six years. So that's about
25 150,000 students.

1 And looking at that group, about three-quarters
2 have only one dimension of strength. So that would be the
3 vast majority of students while well-qualified in many
4 senses, when we look at these four ratings would only have 1
5 or most 1 of those ratings of a 2 or better. A much smaller
6 fraction of students would be like around 20 percent, would
7 have two strengths. So they might have say an academic 2 and
8 an extracurricular 2 or academic 2 and an athletic 2.

9 Then as I mentioned before, the set of students
10 with three or more strengths, so these would be very strongly
11 multidimensional students, students who have an academic 2, a
12 personal 2 and an athletic 2, that's only 7 percent. And
13 these groups with two or more strengths represent about 7,000
14 applicants per year.

15 So even focusing on this sort of multidimensional
16 group, there's still a big process of winnowing that down to
17 get to the 1,700 or so that are going to be admitted.

18 **Q.** Mr. Lee, please show Demonstrative 10.6.

19 And let me ask Professor Card whether you can
20 explain what this shows?

21 **A.** Yes. So this is a simple demonstration of this extreme
22 importance of well-roundedness or multidimensionality to the
23 admissions process at Harvard.

24 So focusing at the left of the graph on the
25 fraction of -- so on the students, this is the three-quarters

1 of students who have one strength or not even that. Their
2 admission rate is only around three percent. So having one
3 dimension of strength is only going to give you an admission
4 rate of about three percent. The overall average admission
5 rate is around 7 percent, so this is much below average.

6 If we go to students that have two strengths,
7 that's the yellow bar, that second strength is having a big
8 effect on their probability of admission. So whereas the
9 first strength gave them a three percent probability of
10 admission, second strength is going to raise their
11 probability of the admission by 11 percentage points, up to
12 14 percent.

13 So the second strength is more valuable than the
14 first.

15 And when we go to the third strength, so students
16 with the three strengths I mentioned before, this is now only
17 7 percent of the applicant pool, but you can see now that
18 group has a 46 percent admission rate on average.

19 And you can see that compared to the second -- the
20 group with only two strengths, the value of that third
21 strength is really large so that we're going from 14 to 46 or
22 we're increasing the probability of admission by 32
23 percentage points with that third strength.

24 And even among students with three strengths, if we
25 go all the way to 4, that fourth strength is also extremely

1 valuable. You're going from 46 to 70 percent admission rate,
2 so you're going to increase the probability of admission by
3 25, 24 points.

4 So one can see this very important feature, that
5 it's not -- one strength alone really doesn't do much for
6 you. You're below average. And if we focus in particular
7 amongst the one strength group is the group that are strong
8 just on academic and their probability of admission is even
9 below three percent, a little bit lower than that.

10 So a group of students that are strong academically
11 but have no other strengths have below average admission
12 rates.

13 **Q.** So what if you're a superstar on academics? I assume
14 that the left-hand bar includes the academic 1s?

15 **A.** Yes, it does.

16 **Q.** What if you're a superstar; is that enough to be admitted
17 to Harvard?

18 **A.** Yes, I think the next demonstrative will show that.

19 **Q.** In that case, please, let's have the next demonstrative.

20 What does Demonstrative 10.7 show?

21 **A.** So let me remind you, the academic 1 is an extraordinary
22 level of accomplishment, so this is not really like just good
23 SAT and GPA. This is only 100 students or 150 students a
24 year that have extraordinarily high level of accomplishment.
25 So they would be students that have virtually perfect scores

1 in most cases but in addition have competed in national
2 contests and math contests or science contests and won. So
3 this would be an extraordinarily high level of
4 accomplishment.

5 So amongst that group of students, with no other 2
6 rating, so this is like academic superstars, their
7 probability of admission of 40 percent. So that's quite good
8 considering that's only a single strength. But for that
9 group of students, adding one additional strength increases
10 their probability of admission by 35 percentage points, from
11 40 to 75. And even among that group, the third strength
12 increases probability of admission by another 20 percent.

13 So even amongst somebody who is an academic
14 superstar, additional strengths are quite important.

15 **Q.** Let's turn now to Demonstrative 10.7 and let me ask you
16 what this shows.

17 **A.** Yes. So this is a side-by-side comparison of the
18 composition of the applicant pool. So this is the group of
19 students who apply to Harvard on the left versus the admitted
20 students. So those are the ones who actually get
21 accomplish -- get admitted.

22 And a reminder that strength represents a profile
23 rating of 1 or 2 on any of these four dimensions. So the
24 applicant pool is sort of one-dimensional. 73 percent have
25 one or fewer strengths. Only 20 percent have two strengths,

1 and only 7 percent have three or more strengths.

2 When we look at the admitted pool, the set of
3 students who actually get admission, almost half have three
4 or more strengths. So they're going from 7 percent of the
5 admitted pool to nearly half -- excuse me, 7 percent of the
6 application pool to nearly half of the admitted pool. So
7 their representation in the admitted pool is seven times
8 larger than their representation in the application pool.

9 Similar in the 2 strength group, their
10 representation is about double, so they're 20 percent of the
11 application pool, 38 percent of the admitted pool, and only
12 15 percent of all students admitted have only one strength.

13 **Q.** Now, to set the stage for the next slide, Dr. Arcidiacono
14 testified, did he not, that Harvard's admissions office
15 discriminates against Asian-American applicants as compared
16 with white applicants, correct?

17 **A.** Yes.

18 **Q.** How did Dr. Arcidiacono characterize the strength of the
19 average Asian-American applicant as compared to the average
20 white applicant?

21 **A.** Well, throughout his presentation, at trial the other
22 day, he was emphasizing the academic index. So many of his
23 charts had deciles of the academic index.

24 The academic index is a construction used to
25 monitor compliance with Ivy League athletics rules. So it

1 has a formula that takes SAT and GPA and constructs an index.
2 And he was using that as an index and focusing on differences
3 across academic index.

4 **Q.** So do you agree with his conclusion that -- his
5 characterization that applicants -- that Asian-American
6 applicants are much stronger than white applicants?

7 **A.** I agree with his characterization that they're stronger
8 on the academic dimension. I think there's no doubt about
9 that. But I would not use the academic index as a measure of
10 strength because as we see in this chart, having one
11 strength, just being strong academically, as we saw in the
12 previous chart, even being a superstar academically is not
13 really sufficient to guarantee admission.

14 **Q.** Did you examine whether white applicants and
15 Asian-American applicants differ again on average in how many
16 strengths they have?

17 **A.** Yes, I did, yes.

18 **Q.** Let's look at the next demonstrative, and let me ask you
19 what Demonstrative 10.9 shows.

20 **A.** So this is focusing on presence of three or four
21 strengths, which I've emphasized that's about half of the
22 overall set of students who end up getting admitted. And
23 this is comparing between white applicants on the right in
24 red and Asian-American applicants on the left in blue.

25 So there's about 7.6 percent of Asian-American

1 students have three or more strengths versus 8.8 percent of
2 white students, white domestic students have that. So that's
3 equivalent to something like 500 students per year Asians
4 versus 900 students per year whites.

5 And so that difference, the 900 versus 500, is a
6 very important thing to keep in mind when looking at the
7 overall characterization of the set of students who are
8 admitted because, of course, there's nine versus five,
9 nine-to-five ratio in terms of the relative representation in
10 this three-strength group.

11 **Q.** So is that difference that you've just described
12 meaningful?

13 **A.** I think it's extraordinarily meaningful and helpful in
14 understanding many aspects of the case, yes.

15 THE COURT: When you get a good spot for lunch, I'm
16 hungry and Kelly has been going all morning.

17 MR. WAXMAN: I believe that I'm just about to --
18 well, I can stop at any time. I have about maybe ten minutes
19 to go before a logical break.

20 THE COURT: Okay. Go ahead.

21 **Q.** Did you examine whether white and Asian-American
22 applicants have different relative strengths across the four
23 dimensions that you've been discussing?

24 **A.** I did, yes.

25 **Q.** And what does Demonstrative 10.10 show?

1 **A.** So this is showing, I think, a point that we just talked
2 about to some extent if we look at these four dimensions of
3 strength.

4 Now, again, I would emphasize that these are not
5 the only dimensions of strengths that are important, but
6 these are the four profile rating measures so they're quite
7 important in the process.

8 Asian-Americans are more likely to have academic
9 strengths so they're -- 60 percent of overall set of Asian
10 students who apply to -- domestic students who apply to
11 Harvard get an academic 1 or 2 versus 46 percent. So this is
12 a very important fact that Asian-American students are, in
13 fact, better qualified on the academic dimension than white
14 students or other groups, in fact.

15 When we look at the extracurricular dimension,
16 they're not too different than the white students. And then
17 when we look at the other two dimensions, you can see that on
18 the personal dimension there's a gap. And on the athletic
19 strength dimension 1 or 2, there's also a gap.

20 And so when you put these three, four pieces
21 together, the multidimensional advantage coming for the white
22 students is coming because although there's a higher academic
23 strength in the Asian students, there's a higher personal and
24 higher athletic strength in the white students and that adds
25 up to a multidimensional strength, a more balanced set of

1 students.

2 **Q.** Were you here during the opening statements in this case?

3 **A.** I was, yes.

4 **Q.** Did you hear Mr. Mortara say that the athletic rating
5 does not matter for anyone who is not a recruited athlete?

6 **A.** I did, yes.

7 **Q.** You agree with that?

8 **A.** No, not at all.

9 **Q.** Please turn in Volume 2 to Tab 5 and look at Defense
10 Exhibit 673.

11 Do you have it?

12 **A.** Yes.

13 **Q.** What is it?

14 **A.** Probability of admission for applicants with different
15 profile ratings.

16 **MR. WAXMAN:** Your Honor, we offer Defense Exhibit
17 673.

18 **MR. MORTARA:** No objection.

19 **THE COURT:** It's admitted.

20 (Defendant Exhibit 673 admitted into evidence.)

21 **Q.** Let's turn now -- thank you.

22 Let's turn now to the next demonstrative, Mr. Lee,
23 10.11.

24 What does this show?

25 **A.** Well, contrary to the opening statement, this is an

1 illustration of the importance of an athletic rating of 2.

2 So this is not an athletic rating of 1, these are not looking
3 at recruited athletes, this is looking at the importance of
4 having an athletic rating of 2, which would be the kind of
5 students who would be strong, expected to participate, say,
6 in the club level as President Simmons was talking about in
7 her testimony a minute ago.

8 So if we look at admission rates on the vertical
9 axis for applicants with one other strength, so suppose
10 they've got an academic strength, so that means they've got a
11 1 or 2 academically, their probability of admission as we saw
12 before was quite low, 2 percent. If we then combine that
13 with an athletics rating of 2, their probability of admission
14 goes up to 8 percent. So there's a significant gain in the
15 probability of admission, four times higher.

16 If we take applicants with two other strengths, so
17 suppose a student that has an academic 1 or 2 and an
18 extracurricular 1 or 2, that's already a pretty good group,
19 so their probability of admission is around 13 percent, twice
20 the average for the overall pool. But if we combine that
21 with an academic -- excuse me, with an athletic 2, their
22 probability of admission rises from 13 percent to 32 percent.
23 So there's a very large -- almost a 20 percentage point
24 increase in their probability of admission from having
25 athletic 2.

1 And similarly for students, even for students with
2 three other strengths on the far right, so they've got an
3 academic 2, an extracurricular 2, and a personal 2, which is
4 a pretty high level, going to the -- completing the set by
5 having an academic -- or excuse me, an athletic 2 would raise
6 their probability of admission by another 18 percentage
7 points.

8 So across the board, having an athletic rating of 2
9 is extremely important and valuable in the process.

10 **Q.** So to sum up, is it fair to say that athletics matters in
11 the admission process?

12 **A.** I think it's fair to say that, yes.

13 **Q.** And is it fair to say that multidimensionality matters?

14 **A.** I don't think it's possible to emphasize too much just
15 how important multidimensionality is. It's really the
16 defining feature of the admissions process.

17 MR. WAXMAN: Your Honor, this is an appropriate
18 stopping point.

19 THE COURT: All right. Why don't we come back at
20 1:15. Does that work for everybody? Okay.

21 MR. WAXMAN: Yes, Your Honor, thank you.

22 (Recess taken, 12:28 p.m.)
23
24
25

1 **** AFTERNOON SESSION ****

2 [Sidebar sealed and redacted.]

3 THE COURT: When you're ready, Mr. Waxman.

4 BY MR. WAXMAN:

5 **Q.** The good afternoon, Dr. Card. Did you construct a
6 statistical model of Harvard's admissions process?

7 **A.** Yes, I did.

8 **Q.** And why did you do that?

9 **A.** That would be completely the standard type of model to
10 use in analyzing something like an admissions decision which
11 is -- in the context of a case like this with many different
12 attributes of candidates that need to be taken into
13 consideration and making a determination about one particular
14 feature like ethnicity.

15 **Q.** And what kind of model did you construct?

16 **A.** So just like Professor Arcidiacono, I used a multivariate
17 logistic regression model.

18 **Q.** What is a regression?

19 **A.** So a regression is a statistical technique, widely used
20 in economics and other fields, where you try to statistically
21 describe the relationship between a series of inputs or
22 factors, sometimes called. So those would be -- in the
23 context of the admissions case, those would be things like
24 gender of a student or where they're from, characteristics of
25 their high school, their transcript, and so on, and relate

1 those to an output. In this case the output would be are you
2 admitted or not.

3 **Q.** When you call something a multivariate logit regression,
4 what does that refer to?

5 **A.** Unpacking the first part, "multivariate" means that it's
6 going to try and simultaneously take account of multiple
7 factors. The interpretation that arises in a multivariate
8 regression means it shows the effect of any one of those
9 factors, holding constant the other factors.

10 So for instance, if I was looking at a model of,
11 say, retirement, which I'm going to present as a
12 hypothetical, and I was trying to look at the effect of
13 higher and lower salary on the effect of retirement, I would
14 be trying to simultaneously do that while holding constant
15 other factors like a person's age. Multivariate regression
16 allows one to isolate the effect of one factor, holding
17 constant the other factors.

18 **Q.** What does it mean to say that a multivariate regression
19 is logit or logistic?

20 **A.** Logit or logistic is a special form of regression model
21 that's specially designed to handle a situation where the
22 output that you're modeling is a yes/no type of output, in
23 this case admissions decision. So you're either admitted or
24 not. So it's going to give rise to -- for each person, it's
25 going to assign a probability that they are admitted.

1 **Q.** And did Dr. Arcidiacono also construct a multivariate
2 logit regression model?

3 **A.** Yes, he did.

4 **Q.** Have you prepared an illustration of how a multivariate
5 logit regression works?

6 **A.** I have, yes.

7 **Q.** Can you please describe what illustration you're going to
8 be using for the Court?

9 **A.** Well, as I just mentioned, I'm going to try and explain
10 some of the concepts in a multivariate regression model and
11 some of the specific concepts that arise in a logistic
12 regression model with reference to a very simple example
13 abstracted from the terms of the case completely to try and
14 keep it isolated on the concepts rather than any particular
15 slant.

16 I'm going to try and use a set of people who are
17 working at a company, observed at a point in time. And over
18 the next year, some of them are going to retire and some of
19 them are not. So imagine 5 percent of these people are going
20 to retire. So that's the output variable, yes or no, do you
21 retire or not.

22 And I'm going to be thinking about a situation, at
23 least to begin with, where there are potentially two
24 important characteristics of people: their age, which
25 obviously is important, and also their salary. To keep it as

1 simple as possible, I think it would be helpful to have a
2 situation where their salary could either be high or low.

3 So each person will differ depending on -- about
4 their ages, which say could be between 25 and 75. Then in
5 addition they'll have a high or low salary.

6 I want to think of a scenario where, as is true in
7 real life, on average older people have a higher salary. But
8 it isn't strictly so. So there's young people and, on
9 average, most young people have low salaries. But some young
10 people, the high performers, I guess, have higher salaries.

11 And then in the older group on average the salaries
12 are higher, so the average fraction of people in the older
13 group is higher for them, but there's also lower salary
14 people in that group.

15 **Q.** So suppose that you now -- we have in mind a simplified
16 hypothetical in which the outcome is retire or not in the
17 next year. And the model has available to it, I think you
18 explained two variables: age and whether they have a lot of
19 money or -- or a high salary or a low salary.

20 Now, suppose you omit from your regression the
21 worker's age and just the model now only knows salary. What
22 might happen to the model's calculation of the estimated
23 effect of salary?

24 **A.** Right. So what would happen, and the way a regression
25 model works is if you exclude variables or they're not

1 available to the model, the model does the best job it can in
2 trying to explain the outcome.

3 In the case where I only had data on salary and the
4 only information that's available to predict who retires and
5 who doesn't and make this assessment is just their salary,
6 not their age. And imagine, for example, that age is a
7 strong determinant of retirement; salary may or may not be.

8 But in the absence of this information about age,
9 the model is going to see, well, on average the people who
10 had high salaries seemed to be the ones who were retiring.
11 People who had lower salaries were not so likely to retire.
12 So it's going to derive an estimate of the effect of salary
13 which suggests that salary has a positive effect on
14 retirement.

15 And the way that's usually thought about is in
16 terms of -- there's two parts of it: a coefficient in the
17 model, and then an effect for each person.

18 **Q.** Let me just stop you there.

19 We've heard testimony in this case both about
20 coefficients from a model and also about something called the
21 average marginal effect or marginal effect.

22 Can you explain the two?

23 **A.** Yes. I'll try. It's an important difference between
24 these two. The way the model is going to work is it's going
25 to -- after the estimation is finished, there's going to be a

1 set of coefficients which represent the relative weights of
2 each of these characteristics or features or variables in the
3 probability of retirement.

4 And actually Professor Arcidiacono referred to
5 those coefficients in his demonstrative. So he was able to
6 show -- discuss this in a demonstrative and show there's some
7 coefficients associated with each factor.

8 Now, once the model is constructed, there's going
9 to be a predicted probability for each person given their
10 characteristics that they retire. And what one does when
11 one's looking at the effect of an individual characteristic,
12 so imagine in general -- not in the specific case we're
13 talking about with only the information on salary, but
14 imagine in general that one has a lot of different
15 characteristics, and for any given characteristic, one can
16 imagine, for example, the probability of retirement from the
17 model when that characteristic is present, and then the
18 probability from the model for the same person when that
19 characteristic is absent.

20 And that difference in probability is the marginal
21 effect for that person of that characteristic. So for
22 example, in my simple hypothetical, I could imagine in the
23 absence of other information that having a high salary might
24 lead to a predicted probability of retirement that might be
25 like 4 percentage points higher than for other people that

1 have low salaries.

2 And so there's a very important characteristic of a
3 logistic model, and this can be -- will be, in fact, very,
4 very important in understanding a lot of different dimensions
5 of this case.

6 And that is that that effect, the marginal effect
7 for any one person will depend on their other attributes. So
8 in general, the coefficient is not enough information to tell
9 what the effect is. One needs to know all the other
10 characteristics to say when I take one individual
11 characteristic like, for instance, higher salary and then
12 turn that on and turn it off, is the lingo we would use, or
13 make it happen and make it not happen, that marginal effect
14 can differ.

15 The way that it's usually summarized, and we've
16 summarized it throughout this case, is in terms of the
17 average marginal effect. And the average marginal effect is
18 the average of this marginal effect, for example, of higher
19 salary across all the people in the sample. And it can be
20 quite different for different people in the sample, and this
21 summarizes it in a very important and useful statistic.

22 **Q.** So for example, just so make sure that Her Honor
23 understands this, the simple model that -- let's say we now
24 have both variables, age and high salary and low salary. The
25 model would, if I understand you, calculate a coefficient for

1 each of those two variables, correct?

2 **A.** Yes, it would.

3 **Q.** But again, if I understand your testimony, the marginal
4 effect that that factor, either an additional year of age or
5 a higher salary has will vary across the population depending
6 on, for example, what their age is, whether they will be 25
7 in the next year or 65?

8 **A.** Yes. Would it be helpful for me to use the whiteboard to
9 try to explain the difference in these two?

10 **Q.** It would be. I don't know if it would be helpful to Her
11 Honor, but I think it might be helpful to you.

12 THE COURT: Or you.

13 MR. WAXMAN: Yes. It would be very helpful to me.
14 Not as helpful as the little animations about people
15 retiring, but . . .

16 **A.** So after the model is estimated, say the sparse model.
17 So over here I'm going to have, say, the sparse model. And
18 it's going to have an average marginal effect for salary, and
19 that could be, like, 4.0. And there might be a star. Okay?

20 And so the way to interpret that in the sparse
21 model, that there's no other factors in that model, but the
22 way to interpret it in general is holding constant everything
23 else about the person. On average, going from a low salary
24 to a high salary across everybody increases their probability
25 of retirement by 4 percentage points. So the 4.0 is the

1 extra percentage points in the probability.

2 **Q.** If a worker with a relatively low salary had a 2 percent
3 probability of retiring in the next year, what would that
4 sparse model predict?

5 **A.** This model would predict on average that the increment of
6 probability across everybody is 4 percentage points. But for
7 somebody who is, say, relatively young -- now, not in the
8 sparse model because the sparse model can't distinguish
9 between people. So the sparse model, having no other
10 information, essentially assumes that everybody gets the same
11 average marginal effect.

12 And the star is the convention that we use to
13 indicate statistical significance at the 5 percent level.

14 **Q.** We've heard about this at least once, but could you
15 explain what that means?

16 **A.** Yes. So if you have a sample of data and you estimate a
17 model, the particular estimate that you get can vary a little
18 bit from sample to sample. And you might have a situation
19 where there's truly no effect, where there really is no
20 effect of salary on retirement. But in some particular
21 sample you would have an estimate that might be a positive or
22 a negative. And so the statistical significance gives an
23 indication of how likely the estimate you got could have
24 occurred by chance when the true answer was zero.

25 So it says -- when you see a star, it means it's

1 quite unlikely. It's less than 5 percent chance; that's why
2 the 5 percent significance level. It's less than 5 percent
3 chance that you would have got this number when the truth was
4 there was no effect. So it gives a sense is this really
5 different than zero, given the data you have. So people say
6 it's statistically significantly different than zero at the
7 5 percent level, for example.

8 **Q.** Is it possible to construct a graph showing how average
9 marginal effect works in this very sparse example only
10 looking at the age of the workers?

11 **A.** If it's possible, I'd like to go on and talk about the
12 richer model now and allow us to discuss the concept of
13 omitted variable.

14 THE COURT: Hold on.

15 You're saying on that model, if all you have is
16 salaries, it's going to be like a straight correlation
17 between age and retirement, right?

18 THE WITNESS: It's going to do this kind of crazy
19 thing of saying everybody with higher salary is more likely
20 to retire because it doesn't have any other information to
21 make the prediction. So it's only going to make two
22 predictions. Everybody that has high salary, like we could
23 imagine that -- let's suppose in the data, the average
24 probability of retirement for people with low salary was
25 2.0 percent per year. This would say the average probability

1 of retirement for people with high salary would be
2 6.0 percent per year. And that difference is the average
3 marginal effect. And that's the only thing it has in the
4 model, so that's the only thing it can distinguish people by.

5 THE COURT: Okay.

6 THE WITNESS: So now let's consider the richer
7 model.

8 So in a richer model, I would have both -- I have
9 two AMEs, AME for salary and AME for age. I'm thinking of
10 the age case as the average marginal effect of each
11 additional year of age. So no one wants to do this, but we
12 could all get one year older, and we could see whether that
13 increased that probability of retirement.

14 BY MR. WAXMAN:

15 **Q.** Not Her Honor.

16 **A.** None of us want to get older.

17 So in this case, I'm going to imagine if the model
18 had access to both salary and age, I'm going to imagine a
19 scenario where age is actually quite an important driver of
20 retirement.

21 So this could have -- let's imagine this effect is,
22 say, a 2.0, and that's statistically significant. So that
23 says each additional year of age increases your probability
24 of retirement on average across all the people by 2
25 percentage points. And then in this case, I'm going to

1 imagine that once you control for age then this falls to 0.6
2 and it no longer has a star.

3 **Q.** Why does that happen?

4 **A.** Yes. So this is the important concept of an
5 omitted-variable bias. So this sparse model doesn't have
6 access to information by age. So this model, only having
7 information on salary, is making the best prediction it can,
8 given salary, and says, well, if you only tell me salary,
9 people with higher salary are more likely to retire. And
10 that's a true fact. And that difference is statistically
11 significant.

12 However, the richer model now with access to two
13 pieces of information, the interpretation of this variable is
14 what's the average marginal effect; in other words, the
15 effect on average across all people of giving a higher salary
16 when you control for age.

17 So in the multivariant model now, there is not a
18 statistically significant effect and it is actually positive,
19 but it's not statistically different than zero, so we could
20 think of it as roughly zero. So that says in a model that
21 has access to both salary and age, there isn't a difference.
22 There is a difference by age. And this difference, the
23 difference between the 4.0 and the 0.6, that's the
24 omitted-variable bias. So the omitted-variable bias is the
25 fact that this is different than that.

1 **Q.** And when does the omission of a variable cause bias?

2 **A.** So this is extremely important, too. Remember the
3 setting for my scenario is kind of a somewhat realistic work
4 force where older people earn more. So if you don't have
5 information on salary -- excuse me -- if you don't have
6 information on age and you only see salary but the true
7 effect is driven by age, there will be a problem.

8 So you'll have a problem when the omitted variable
9 is correlated with the included variable. So older people
10 have higher salaries. And that variable is important, so you
11 need two things to be true. You need an omitted-variable
12 bias as driven by the omission or exclusion of a very
13 important variable that is correlated with some of the
14 factors that are included in the model.

15 **Q.** So for example, if we made your model even richer and
16 included -- we knew everybody's hat size, is it likely that
17 including the hat size would demonstrate that there was, in
18 fact, omitted-variable bias in the model with two factors?

19 **A.** No. A good feature of regressions and actually why
20 they're used by economists and social scientists and many,
21 many other researchers, is if you have a set of factors and
22 there's some factor such as, let's say, hat size or eye color
23 or something like that, it really isn't a driver. It's just
24 some variable that is different across people.

25 The regression model will find that that has a zero

1 effect on average almost all the time. The regression will
2 successfully sort out the factors that matter and the factors
3 that don't matter.

4 So in this particular richer model, it's saying,
5 well, on average, age is an important factor. Once you
6 control for age, salary is not an important factor. If you
7 put it into the model, hat size, it should have a
8 statistically insignificant effect or not a statistically
9 effect, close to zero most of the time.

10 **Q.** Professor Card, when economists and econometricians are
11 studying real world outcomes, for example, whether a worker
12 will or won't retire, is it ever possible to avoid
13 omitted-variable bias?

14 **A.** Unfortunately, no. The reason is in realistic data
15 settings, the kind where you're observing real data like I'm
16 observing people at a company and seeing whether they retire
17 or not, in those settings you can never be 100 percent sure
18 that you've got all of the real relevant factors in the
19 model.

20 In all of those models, there's inevitably an
21 important unexplained component in the model. So the model
22 does not perfectly describe who retires and who doesn't. It
23 can't perfectly classify people.

24 **Q.** So thinking about your retirement example, can you give
25 from your experience some example of factors that are omitted

1 from this two-variable model that would be thought to be
2 relevant to a decision of a worker whether to retire in the
3 next year?

4 **A.** So I've had a number of students who have done research
5 on retirement, and I've done a couple of papers on that
6 myself.

7 One of the most important drivers of retirement is
8 health, and so less healthy people are much more likely to
9 retire. And unfortunately health is correlated with age, so
10 one -- even with this richer model, since it doesn't control
11 for health, one might be concerned that health is actually
12 the culprit, is really the driver. And this 2.0 percent here
13 is itself affected by omitted-variable bias.

14 **Q.** So would, for example, the climate that you live in be
15 expected to be a variable that might correlate with the
16 probability of retirement?

17 **A.** Yes. Lots of other factors. You could imagine, for
18 instance, the situation of your family, is your spouse
19 retired or working? A situation with your children, are they
20 still living with you? Did you manage to get them out of the
21 house?

22 **Q.** Or grandchildren.

23 **A.** Or grandchildren would be a good example.

24 Climate -- and some factors like that might be
25 quantifiable. And other factors it would be very difficult

1 to quantify but might be important, like, for instance, the
2 relationship with your coworkers.

3 It's thought that a very important driver of
4 retirement is job satisfaction, which may be driven by do you
5 get along with your boss or something like that. Ordinarily
6 there's many of these unquantifiable factors as well as some
7 quantifiable potentially.

8 **Q.** I believe you answered my next question, but let me just
9 ask it anyway.

10 If you include in your regression every variable
11 for which you have data, does that mean that there's no
12 omitted-variable bias?

13 **A.** Unfortunately not, no. That's a huge problem in all
14 kinds of research, any research projects that I've worked on.

15 So one can never be certain that the factors that
16 you've omitted or can't measure aren't available. Sometimes
17 they're either not available in the data set or they're just
18 not quantifiable. One can never be certain that they not
19 correlated, say, with age, one of the included variables, and
20 therefore are leading to some sort of omitted-variable bias.

21 So ordinarily it's a matter of understanding the
22 process that you're working with, trying to document
23 carefully, and think carefully about what's omitted and make
24 some assessment.

25 **Q.** So the Court was asking you when we were back on the

1 exceedingly sparse model as opposed to the very sparse model,
2 the relationship between -- what the average marginal effect
3 curve would look like for the population.

4 Can you now demonstrate that for us?

5 **A.** Yes, I can.

6 **Q.** On a model?

7 **A.** Yes. So I'm going to do an example of this. So imagine
8 on this axis I'm going to have -- I apologize. I could never
9 draw a straight line.

10 This is age, and this is the probability of
11 retirement, and that can range from zero to 100 percent. So
12 I've got, say, people down here. The youngest person in my
13 sample might be 25. Let me draw a benchmark at 60, another
14 benchmark at 70, and I might have people as old as 75 in my
15 sample.

16 What will come out of the model is a set of
17 predictions by age. And they will ordinarily look something
18 like this. Like that. So the shape of this curve, this
19 S-curve, that's actually called a logistic curve. So the
20 reason why this is called a logistic regression has to do
21 with this logistic shape.

22 In the range down here, I'm imagining in my model
23 that on average there's a two-year -- a 2.0 percentage point
24 effect of retirement. Which means if I was to go all the way
25 from age 25 to all the way to 75, that 50 years would change

1 my probability of retirement from zero to 100 percent. So
2 that's kind of a scaling factor.

3 But for many, many people, people say below
4 something like 55 or something like that, even though I've
5 got one coefficient in the model which represents the effect
6 of age, so it's the same coefficient, even though there's
7 only one coefficient in the model, the probability of
8 retirement down here is so low that the average marginal --
9 the marginal effect for one of these people, say somebody
10 down here who's like 40, going from 40 to 41 actually will
11 have almost no effect on their probability of retirement. So
12 these people will have a very low probability.

13 And if you look at the graph, you can see the same
14 kind of pattern at the top. Up at the top, this is a group
15 of people that are very close to retirement. And so an
16 additional incremental effective age, so going from 75 to 76,
17 isn't going to have much of an effect. All of the marginal
18 effect in the model, almost all of it, is attributable to
19 this group which you can think of as being on the bubble.

20 And the important thing about this logistic curve
21 is if you have that situation for people in that group, one
22 more year of age, going from 70 to 71, for that group of
23 people could have a much bigger effect than just a 2. It
24 could have like a 5 or a 6 or a 7 percentage point effect.

25 So in these logistic-type settings where there's

1 lots of people who are kind of out of the money for
2 retirement, they're too young, and a lot of people who are
3 very, very close or almost surely going to retire in the next
4 year, all of the effects are concentrated in that group of
5 people on the bubble.

6 I think that's all I have, actually. I think I can
7 sit down.

8 **Q.** I can't remember any other points we were going to
9 demonstrate.

10 **A.** Let me sit down. If I could, I might have wanted to add
11 one more point, which is if we have this situation and we had
12 other characteristics like, for example, health, then the
13 effect of health would also have this property that younger
14 people -- even though health can be a very powerful predictor
15 of retirement, its average marginal effect would be
16 concentrated for the people on the bubble.

17 So the characteristic of a logistic model is that
18 any factor has kind of a multiplied or a much more powerful
19 effect, once you get into the range where the probability
20 starts to be, say, between 5 percent and 90 percent or
21 something. So that group of people in the bubble, all of the
22 variables in the model have a magnified marginal effect in
23 there.

24 **Q.** So if what we were looking at is not the average marginal
25 effect but the coefficient associated with the variable,

1 would that tell you -- could that tell you what the shape of
2 the curve was like or the effect of --

3 [Alarm system goes off in Federal Courthouse]

4 **Q.** I'd like to have him give that answer and then we can
5 move on, but if that puts people in harm's way --

6 THE COURT: Now I can't remember the question.
7 Please head out.

8 (Off the record)

9 THE COURT: Whenever you're ready, Mr. Waxman.

10 MR. WAXMAN: For the record, we've marked the
11 whiteboard as DD 10.A and 10.B.

12 (Defendant Exhibit DD 10.A. and 10.B admitted.)

13 MR. WAXMAN: I honestly don't recall the question
14 at all. Could I ask the court reporter --

15 THE WITNESS: I know what the question was. You
16 asked me, Mr. Waxman, to once again explain the difference
17 between the coefficient and the marginal effect.

18 BY MR. WAXMAN:

19 **Q.** Oh, yes. Would you please.

20 **A.** Yes. So this is just a hypothetical. It isn't totally
21 representative. In general what would be true in a logistic
22 regression model is that one could have, for example, a
23 single coefficient on age. And yet the marginal effect will
24 differ across people in the pattern shown here. So that's
25 why I was emphasizing before that distinguishing between the

1 marginal effect and how it differs across different ranges of
2 people versus the coefficient is extremely important in
3 understanding these kind of models and how they imply things.

4 As I was saying before, for people in the bubble
5 range, all of the different factors are magnified. One
6 additional factor, for instance, health or age or presence of
7 grandchildren, those factors sort of have a multiplicity
8 effect in the bubble range.

9 **Q.** Let's now talk about the model that you prepared in this
10 case. What data did you use to construct your model?

11 **A.** As I mentioned before, the data consists of two sources
12 of information. One is information on the application files
13 in the NEVO system for the class of 2014 to 2019. And the
14 second source of data is information from the College Board,
15 which basically sells information to colleges constructed
16 from different sources providing information about
17 characteristics of groups of high schools that are sort of
18 grouped together and for groups of neighborhoods that are
19 grouped together. And so I've matched that data on as a type
20 of contextual factor.

21 **Q.** In constructing your model, how did you determine which
22 variables to include?

23 **A.** Well, I followed basically the same procedure as I would
24 in any kind of research enterprise. So it's a combination of
25 trying to understand what factors are important in the

1 admissions process through reading documents in the case and
2 some of the testimony.

3 I knew something of the literature on admissions.
4 A number of my Ph.D. students have written papers on
5 admissions, so I knew generally about that. And then looking
6 at the data that's available and thinking about which aspects
7 could be quantified and what was available and what wasn't
8 and so on.

9 **Q.** Would you turn to Volume 2, Tab 17, and tell me when you
10 have Defense Exhibit 693.

11 **A.** I have it, yes.

12 **Q.** What is that?

13 **A.** It's a six or seven-page list of the variables used in my
14 model and Professor Arcidiacono's model of admissions.

15 MR. WAXMAN: Your Honor, we offer 693.

16 MR. MORTARA: Your Honor, we object. It's not a
17 Rule 1006 summary. It's an assemblage of demonstratives
18 created by the expert. It is not a summary of the database.

19 MR. WAXMAN: Your Honor, this information is in
20 verbatim form in Mr. Card's rebuttal Appendix C and his
21 original report Appendix E. It is simply a listing of the
22 variables that each expert --

23 THE COURT: The objection is overruled.

24 (Defendant Exhibit No. 693 admitted.)

25 BY MR. WAXMAN:

1 **Q.** Looking at these variables, Dr. Card, does your model
2 capture everything about the Harvard admissions process?

3 **A.** Certainly not, no.

4 **Q.** What kinds of data does it not include?

5 **A.** Well, it excludes a lot of information that would be
6 directly observed by the admissions officers, information
7 coming from, for example, essay or a personal statement that
8 a student submits, information coming from the letters that
9 are written on behalf of a student by the two teachers and
10 the guidance counselor, information that's summarized in the
11 reports from the alumni interviewer.

12 And my understanding is that many, many files these
13 days have multiple additional letters from community members
14 and things like that.

15 So that kind of qualitative information is
16 completely missing from the database, and that's an important
17 limitation of what I can do with the data.

18 **Q.** Did you hear or review testimony about how the profile
19 ratings are used as an applicant proceeds into subcommittee
20 and committee discussions?

21 **A.** I did, yes.

22 **Q.** And what do you understand from your review of the
23 materials and the testimony?

24 **A.** So my understanding is that the profile ratings, for
25 example, would be assigned by the first reader based on

1 reading the file and looking at both the quantitative and
2 qualitative information that they have. And then it might be
3 updated by a second reader.

4 But once the file gets to the subcommittee level
5 where they're reviewing files from the same docket -- and my
6 understanding is they would often be looking at files -- all
7 the students from the same school at once, my understanding
8 in that case is that the individual officers would be looking
9 at the materials themselves, not necessarily concentrating at
10 all on the ratings. Because at that point they then have the
11 materials to look at.

12 And similarly my understanding is that at the
13 committee level where there's a group of 40 people and
14 they're going to take a vote, that they're actually reviewing
15 material on slides and overheads and evaluating the
16 individual material.

17 And in some cases, for example, I guess there was
18 an example of this earlier in the trial where there was an
19 application where clearly information came in after the
20 original first profile ratings were assigned. And my
21 understanding is that in most cases that late information, if
22 it's in time for the committee, would be reviewed and
23 interpreted.

24 **Q.** So would any of the text of -- the substance of any of
25 the subcommittee or committee discussions be reflected in the

1 database?

2 **A.** No, it's not.

3 **Q.** What about the note -- we've seen a bunch of admissions
4 files now. What about the notes that are taken by one or
5 more admissions officers? Are they reflected in the
6 database?

7 **A.** No, they're not.

8 **Q.** Did you hear testimony that the ratings or see evidence
9 that the ratings that individual first readers or second
10 readers provide include not only whole numbers but pluses and
11 minuses?

12 **A.** Yes.

13 **Q.** Is that information included in the database?

14 **A.** Unfortunately not. So the database only allows the whole
15 number for the profile ratings.

16 **Q.** So in terms of what the model does, it has -- correct me
17 if I'm wrong. I'm not trying to provide your testimony.

18 It has no way to distinguish someone whom a reader
19 has assigned a 2+ on a particular factor to a 2-?

20 **A.** Right. And my understanding is that that actually is a
21 fairly big gap, to tell you the truth.

22 **Q.** Now, in Dr. Arcidiacono's model, did he omit any of the
23 variables that you included?

24 **A.** Yes.

25 **Q.** Which ones?

1 **A.** Well, the most important ones are first -- I'm speaking
2 now of his preferred admissions model.

3 **Q.** Yes.

4 **A.** The most important ones would be indicators for the
5 so-called ALDC categories because he doesn't include that
6 group of students in -- or applicants in his model.

7 Another set of variables would be variables
8 representing the intended careers of individual applicants.

9 Another set of variables that he excludes would be
10 variables representing the mother's and the father's
11 occupations, categorizations of those occupations.

12 Another variable he excludes is an indicator for
13 whether the student had an interview with the staff prior to
14 admissions season.

15 And then he also excludes the personal rating
16 entirely from his preferred model.

17 **Q.** Now, let's -- Mr. Lee, if we could put up demonstrative
18 10.2, and focus on the first question that you addressed.

19 What is your opinion as to whether statistical
20 evidence supports SFFA's claim that Harvard discriminates
21 against Asian-American applicants?

22 **A.** In my opinion, the statistical evidence does not support
23 that claim.

24 **Q.** How did you reach that conclusion?

25 **A.** Well, I reached that conclusion by a combination of

1 looking at the statistical evidence and thinking about that
2 statistical evidence in the context of available information
3 about the admissions process.

4 **Q.** And in your model evaluating the effect of Asian-American
5 ethnicity, what racial group did you use as a baseline?

6 **A.** In every case, I used white domestic students.

7 **Q.** And why did you choose that baseline?

8 **A.** Well, my understanding is that that is in some sense the
9 proper reference group for thinking about these issues. Some
10 other racial groups, for example, underrepresented minority
11 groups, could potentially receive some kind of a tip in the
12 admissions process in some cases. And so I don't want to use
13 that group as the reference group. I use the group that's
14 kind of baseline representation of the admissions pool.

15 THE COURT: Can I ask one question?

16 Just thinking back on the missing variables. Could
17 you have and then did you take in the profile ratings, like
18 kind of your initial pass, and then compared profile ratings
19 above a certain number to who actually got in? Like could
20 you figure out who got in but didn't look like they would
21 have made it in on the profile scores and then broken that
22 down by ethnicity?

23 THE WITNESS: I think, Your Honor, I have never
24 actually done that. One could do that. And there are
25 certainly cases, for example, I showed in my slide early on

1 there are some students who are admitted who have only one
2 strength. And I suspect that in some cases that may be this
3 kind of student.

4 Oftentimes it might represent this late
5 information, I think. I'm not entirely sure. I don't
6 believe that I've done that. I think it's possible we could
7 have some tabulations of that overnight if you wanted to see
8 it.

9 THE COURT: I don't think anyone is going to allow
10 me to do that, but it would be interesting to see.

11 MR. WAXMAN: We --

12 THE COURT: No.

13 MR. WAXMAN: Not that I'm in a position to allow
14 you to do anything, Your Honor.

15 THE COURT: I'm just curious about whether there's
16 a way to sort of -- both you and the other expert talked
17 about missing variables and the missing-variable bias. And
18 I'm just thinking that by seeing who looks like they should
19 have gotten in on the numbers and then who actually got in,
20 it's a way to account for the size of that missing-variable
21 bias. Do I have that wrong?

22 THE WITNESS: Your Honor, no. That's actually --
23 I'm going to show something very much along those lines.
24 That's a very good insight. That's a general point that when
25 the factors in the data are relatively sparse or unable to

1 explain the phenomenon, then the concern about these omitted
2 variables is much larger. And that differs across -- well,
3 first of all, it differs between different models, and it
4 also differs in terms of, for instance, Professor Arcidiacono
5 fit some models of the program ratings and some of them, they
6 differ in terms of how much unobserved content there is in
7 his models.

8 BY MR. WAXMAN:

9 **Q.** I think you were just explaining why you used white
10 applicants as the baseline in evaluating discrimination,
11 alleged discrimination against Asian-Americans. Let me ask
12 you now what your model showed.

13 **A.** So relative to that benchmark, so relative to white
14 domestic students, my model shows that there's no
15 statistically significant difference in admission rates
16 between Asian-Americans and white applicants.

17 **Q.** Would you turn in your Volume 2 of exhibits to Tab 13,
18 please.

19 **A.** Yes.

20 **Q.** What is this?

21 **A.** So this is a summary exhibit from my rebuttal report,
22 showing average marginal effect of Asian-American ethnicity
23 and confidence intervals.

24 MR. WAXMAN: Your Honor, we offer Defense
25 Exhibit 685 into evidence.

1 MR. MORTARA: Your Honor, I object. To be clear, I
2 do not object to the witness discussing this. I object to it
3 as a 1006 summary of the database. It is his opinion. It's
4 from his report. His report is not evidence.

5 MR. WAXMAN: Your Honor, this is in the report. It
6 was disclosed. It represented his conclusions. I could ask
7 him to read all these numbers into the record if Your Honor
8 doesn't admit it, but there's nothing undisclosed about this.
9 And it is the result of his regression model.

10 MR. MORTARA: Your Honor, my objection is not a
11 failure of disclosure. It goes to what goes into evidence
12 versus what is a 611 demonstrative, as we discussed this
13 morning.

14 THE COURT: I thought we had agreed they were all
15 coming in.

16 MR. MORTARA: The demonstratives of slides, yes,
17 Your Honor. This is one of the exhibits that we discussed
18 this morning. This is an exhibit that is not a 1006 summary
19 of the database. It is, in fact, a portion of the expert's
20 report which is being used here, I guess now as a
21 demonstrative. It's now being offered into evidence.

22 I am absolutely fine with the Court taking it into
23 evidence as long as our demonstratives that were used with
24 our experts would also come into evidence. And as I
25 mentioned this morning, this is angels on a head of a pin.

1 There's no problems here as long as there's equal treatment
2 on both sides.

3 THE COURT: I thought we had agreed this morning
4 that all the demonstratives would come in.

5 MR. MORTARA: For use of the demonstratives. I'm
6 sorry I was not clear, Your Honor. I have no more objections
7 to use of any demonstratives. I have objections to the
8 admissibility. This goes to the jury bench issue we
9 discussed this morning.

10 THE COURT: I understand the issue. I just thought
11 we had agreed this morning that they were all going to be
12 treated equally and that we had agreed they would all be
13 admitted into evidence.

14 MR. MORTARA: That was not what I was
15 communicating, Your Honor. But if they're fine with that,
16 that's absolutely fine.

17 MR. WAXMAN: That's fine. The next demonstrative
18 shows this precisely.

19 MR. MORTARA: Then, Your Honor, at the end of the
20 day, we'll offer our demonstratives as well with no
21 objection.

22 THE COURT: Is this a new concept or is this not
23 what we agreed to this morning?

24 MR. LEE: I think to the extent he's talking about
25 Dr. Arcidiacono, that's what we agreed to this morning. I

1 assume that we're talking about the demonstratives that we
2 used during his testimony.

3 MR. MORTARA: Yes, of course. We're just talking
4 about now what is going to be admitted.

5 THE COURT: Right.

6 MR. MORTARA: The disclosure issues on the
7 demonstratives for Professor Card with the ruling this
8 morning have been completely resolved. There are no
9 disclosure issues.

10 We're now only talking about what's going to be
11 admitted. We've now reached a secondary additional
12 agreement. And I will sit down now, if that's okay.

13 THE COURT: You can sit down. I thought we had
14 agreed this morning that that secondary agreement was already
15 agreed to. Had we?

16 MR. LEE: We had.

17 MR. WAXMAN: It was my understanding and it's also
18 fine with us.

19 THE COURT: So whether or not we agreed to it this
20 morning, we'll admit all of the demonstratives.

21 MR. WAXMAN: In that case, Mr. Lee, can you pull up
22 Demonstrative 10.30.

23 BY MR. WAXMAN:

24 **Q.** Professor Card, what does this show?

25 **A.** So this summarizes the results of my model estimation. I

1 estimate my admissions model separately by year, as I'll be
2 discussing in some detail later on.

3 And so the result of the estimation in each year is
4 an average marginal effect for Asian-American ethnicity. And
5 what that represents is the difference in admission rates in
6 percentage points between Asian students and white students,
7 holding constant all the characteristics of the students that
8 are in the model.

9 So for example, in the 2016 admissions cycle, Asian
10 students have a 0.09 or 9/100 of a percentage point higher
11 probability of admission than white students, holding
12 constant all their other characteristics.

13 And you can see at the bottom there's a number
14 overall, and that's a weighted average. It's essentially an
15 average. There's roughly the same number of students per
16 year, but it's a weighted average reflecting the slight
17 differences in the number of students per admissions cycle,
18 of those effects across years.

19 And let me point out a couple of characteristics of
20 these estimated average marginal effects. First of all, the
21 average value is very small and close to zero, not
22 statistically significant. There's no star.

23 So the average gap, once you take account of all
24 the factors on average across these six years, is only 5/100
25 of a percentage point difference between whites and Asians.

1 Secondly, year to year there's some positives and
2 some negatives. None of them are statistically significant
3 either. That's exactly the kind of pattern you would expect
4 if the true effect was zero.

5 And from year to year there's some differences
6 arising from just statistical differences that are by chance.
7 So you would expect a pattern that's distributed around zero,
8 a positive and negative.

9 And so my conclusion of no statistical evidence of
10 discrimination in admissions is largely and fundamentally
11 coming from this analysis.

12 THE COURT: I'm sorry. Would Dr. -- I'm never
13 going to get his name right -- Arcidiacono.

14 MR. MORTARA: Arcidiacono.

15 THE COURT: Would his numbers have been the same if
16 he had done a year-by-year analysis instead of doing all six
17 together, or does this take into account the variables that
18 you're including that he didn't?

19 THE WITNESS: Thank you, Your Honor. This takes
20 account of the -- this is my model which has these extra --
21 first of all, it has the ALDCs in it. Secondly, it has the
22 extra variables. So his estimate is year by year, which he
23 has in his report someplace for some version of his model.
24 They would be different.

25 BY MR. WAXMAN:

1 **Q.** So before we leave this, just let me ask you, just to
2 understand -- I understand none of these percentages are
3 statistically significant; that is, they could very well have
4 occurred by chance.

5 But if you look at, for example, in the overall,
6 the weighted overall, assuming that the average admission
7 rate for white applicants were 8 percent, what would the
8 model predict the admission rate for -- in the overall model
9 be for Asian-American applicants?

10 **A.** So what it would predict is if Asian-Americans had the
11 same average characteristics as whites, which they don't, but
12 if they did, then their admission rate would be 7.95
13 percentage points. So it says that controlling for
14 characteristics, there's a 5/100 of a percentage point gap.

15 **Q.** For 2016, which is the first example you used, if white
16 applicants even then had an 8 percent probability of
17 admission, what would that predict, all other things equal,
18 the Asian-American rate of admission would be?

19 **A.** If they had the same characteristics as whites in that
20 year, then it would have been 8.09.

21 **Q.** Now, so you testified that these are all statistically
22 insignificant. And again, am I correct that that means that
23 the effects that you're observing here in any year and
24 overall are not statistically different than zero?

25 **A.** Yes. That's exactly what the statistical significance

1 means, that these effects could have occurred by chance with
2 some probability, yes.

3 **Q.** In other words, could the expected admission probability
4 of Asian-American applicants be the same as that of otherwise
5 identical white applicants, according to the model?

6 **A.** Yes. According to my model, in fact, my interpretation
7 is that seems to be quite likely.

8 **Q.** Professor Card, did you conduct any other analyses to
9 test your results?

10 **A.** Yes. So one analysis that is often done in professional
11 research is -- to try and understand what's driving the
12 results and how they vary and so on would be to try and
13 estimate the model on a subset, a larger subset of data.

14 I should emphasize my model has -- in any given
15 year has a couple hundred variables in it, 200 or so. So I
16 need to use a larger subset. So I looked at two large
17 subsets of students where there's a significant Asian
18 population. One is just females and one is students from
19 California.

20 **Q.** Would you please turn to -- well, let me ask you first.

21 When you did that analysis, what did you find?

22 **A.** What I find in those cases is very similar kind of
23 pattern as we see in the overall sample, which is quite
24 reassuring from my interpretation, I think.

25 So what we see is, in fact, on average the marginal

1 effects in both of those samples are slightly positive, but
2 again not statistically different than zero.

3 Year by year none of the estimates are
4 statistically significant than zero. So for both Asians and
5 whites from California and for Asian and white females, the
6 gap between Asian students and white students, controlling
7 for other characteristics, is not statistically different
8 than zero.

9 **Q.** Would you please turn to Tab 14 in Volume 2 of your
10 binder.

11 **A.** 14?

12 **Q.** 14. It should be Defense Exhibit 686.

13 **A.** Yes.

14 **Q.** What is that?

15 **A.** So it's a series of exhibits, percentage of
16 Asian-American applicants with profile rating of 2 or better
17 by gender, summary of Asian-American effect for female
18 applicants, a summary of Asian-American effects for
19 California, and a pie chart of the shares of students in
20 those categories.

21 **Q.** And are these pages of this exhibit identical to the
22 information provided in your report, Exhibit 24, and your
23 rebuttal Exhibits 19, 20, and Footnote 108?

24 **A.** To the best of my knowledge, yes.

25 **MR. WAXMAN:** Your Honor, we'd offer defense

1 Exhibit 686.

2 MR. MORTARA: No objection, Your Honor.

3 THE COURT: Admitted.

4 (Defendant Exhibit No. 686 admitted.)

5 BY MR. WAXMAN:

6 **Q.** Let's turn now, please, to defense demonstrative 10.31.
7 And what does this show?

8 **A.** So this is a summary of the estimation results when I
9 estimate the model separately for only females and then
10 separately for only applicants from California.

11 And again, the format is the same as the table we
12 were looking at before. So the model is estimated year by
13 year, and each year there's an average marginal effect which
14 represents any difference between the admission rate of
15 Asian-Americans and white Americans, for example, in the
16 first column for females only and in the second column for
17 applicants from California only. And then a summary at the
18 bottom.

19 **Q.** And what does this show?

20 **A.** Well, as I mentioned, we discussed just before, on
21 average across both of these -- looking across each of these
22 groups, none of these estimates are statistically
23 significant.

24 For females, the average across all six years is
25 0.14 positive but not statistically significant.

1 For Californians, the average is a little bigger.
2 It's 0.32, but again, not statistically significant. And
3 none of the individual year-by-year estimates is
4 statistically significant.

5 **Q.** And is this subgroup analysis consistent with your
6 overall analysis of the Asian-American applicant pool?

7 **A.** Yes.

8 **Q.** Looking at the next demonstrative, can you tell us what
9 percentage of Asian-American applicants to Harvard fall
10 within one of those two groups, women or Californians or
11 women from California?

12 **A.** 64 percent.

13 **Q.** Do you recall Dr. Arcidiacono's testimony that
14 Asian-American applicants are favored in the ALDC categories?

15 **A.** Yes.

16 **Q.** Do you recall him testifying that he found a positive
17 estimated effect for being Asian-Americans for the group of
18 applicants who are ALDCs?

19 **A.** Yes.

20 **Q.** What does that mean?

21 **A.** So what that means, if one looks with his model, he
22 doesn't estimate the model separately for different groups.
23 He estimates a separate effect for Asian-Americans for
24 different groups in his analysis, and he doesn't estimate the
25 model separately year by year. So he comes up with a single

1 summary measure.

2 But if one takes his model, it shows that
3 controlling for other characteristics amongst the ALDC
4 population -- or did he say the LDC population. I'm not
5 precisely remembering which of the two he did say. So either
6 amongst the ALDC or the LDC, one of those two, there was a
7 positive difference for Asian-Americans, which means in that
8 group they're more likely to be admitted than whites,
9 controlling for their characteristics.

10 **Q.** We'll get into your model in a minute.

11 But do you agree with that conclusion?

12 **A.** I do, yes.

13 **Q.** Did you analyze the effect of Asian-American ethnicity
14 for legacies, children of faculty and staff, and applicants
15 on the dean's or director's interest list in
16 Dr. Arcidiacono's model?

17 **A.** Yes. One of the things I did in one of my reports was
18 look at that, yes.

19 **Q.** Would you please turn to Tab 2 in Volume 2. Do you find
20 Defense Exhibit 707?

21 **A.** I do, yes.

22 **Q.** And what is that?

23 **A.** It's a summary of average marginal effects of
24 Asian-American ethnicity on the likelihood of admission for
25 LDC applicants from Professor Arcidiacono's preferred model.

1 **Q.** And is this Defense Exhibit 707 replicating the results
2 from your rebuttal report and Footnote 93?

3 **A.** Yes.

4 MR. WAXMAN: We offer Defense Exhibit 707.

5 MR. MORTARA: Your Honor, I have ultimately no
6 objection but one minor point.

7 Harvard lawyers and I had negotiated a change to
8 the title of this one because it is not Professor
9 Arcidiacono's preferred model. It is Professor Arcidiacono's
10 model when Professor Card adds back in the athletes, so he
11 made a change to it. It is not, in fact, Professor
12 Arcidiacono's model.

13 MR. WAXMAN: I have no objection to altering the
14 title of the model. First of all, we'll change the title.

15 May it be admitted?

16 THE COURT: Yes. Someone will give me a new one of
17 these?

18 MR. WAXMAN: Yes, indeed.

19 (Defendant Exhibit No. 707 admitted.)

20 BY MR. WAXMAN:

21 **Q.** Let's look now, Professor Card, at defense demonstrative
22 10.33. And what do you find here?

23 **A.** Well, this is the results of that analysis, so using
24 Professor Arcidiacono's model with athletes.

25 In that model, the average marginal effect of

1 Asian-American ethnicity for lineage applicants is 3.12
2 percentage points. So it's 3.12 percentage points higher
3 admission rate for lineage applicants who are Asian than for
4 white applicants who are white lineage applicants. And that
5 is statistically significant.

6 And then the estimate for applicants on dean's and
7 director's list and children of Harvard faculty as a group
8 together is 3.15 percentage points. That estimate is not
9 statistically significant.

10 **Q.** Roughly what proportion of admitted students are ALDCs?

11 **A.** Just under 30 percent of all admitted students are ALDCs.

12 **Q.** Did you hear Dr. Arcidiacono testify that the positive
13 estimated effects of Asian-American ethnicity were not
14 statistically significant?

15 **A.** I believe I did, yes.

16 **Q.** Was that correct?

17 **A.** No, not as this exhibit shows.

18 **Q.** And are you referring to the star of statistical
19 significance next to the positive average marginal effect of
20 Asian-American ethnicity at 3.12 percent?

21 **A.** Yes, I am.

22 **Q.** So what conclusion do you draw from these findings, the
23 findings that ALDC applicants, whether lineage applicants or
24 LDC applicants, have a higher marginal effect of being
25 admitted than white applicants in the same group?

1 **A.** Well, I find -- I think there's a perfect possible
2 explanation for this, but I find it totally inconsistent with
3 the idea that on the Harvard application process is
4 discriminating against Asian students.

5 Because in this set of students, there's actually
6 positive, and certainly among the lineage, which is the
7 largest group of the ALDC by far, there's a statistically
8 significant effect.

9 So I find it hard to reconcile the idea of
10 discrimination against Asian students with this finding of a
11 positive effect here.

12 THE COURT: To come to that conclusion, what if the
13 Asian legacies were much better or much worse qualified than
14 the white legacies? Do you have to somehow look at the
15 profile ratings to have that statistic mean anything?

16 THE WITNESS: Thank you, Your Honor. These models
17 have a fairly extensive list of controls for all of those
18 things. So profile ratings, SAT scores, and so on. So the
19 average marginal effects are always other things equal or
20 controlling for anything that we can observe.

21 Now, of course, they don't control for the
22 unobserved things, and so another alternative interpretation
23 for differences across groups is that. But this is
24 controlling for everything that's in his model when his model
25 was extended to the ALDC population.

1 THE COURT: Thank you.

2 BY MR. WAXMAN:

3 Q. Now, Dr. Arcidiacono thinks that the statistical evidence
4 shows discrimination against Asian-Americans, right?

5 A. Yes, he does, yeah.

6 Q. How can two models of the same process reach different
7 conclusions?

8 A. Well, I think there's primarily two main explanations for
9 that. One is that he's excluded the ALDC group for whom
10 there's this positive effect. So he's focusing on a subset
11 of applicants, in particular a subset of applicants who are
12 highly represented in the overall admission pool, admitted
13 pool. So 29 percent of all admitted students are ALDCs.

14 And secondly, he's made a set of choices about
15 variables to exclude from his analysis, so these parental
16 option variables, whether the student had an interview with
17 the staff, their intended careers.

18 And that combination of choices to exclude
19 variables and exclude the ALDCs I think directly accounts for
20 the difference in our findings.

21 Q. So let's look at the next demonstrative 10.34 and ask you
22 to explain to the Court what is reflected here.

23 A. So this is meant to be a schematic summary of three main
24 sets of differences. I'm showing my understanding and my
25 belief of what the actual admissions process is at Harvard in

1 the first column, the way that that particular issue is
2 handled in my model in the second column, and the way that
3 that issue is handled in Professor Arcidiacono's model in the
4 third column.

5 MR. WAXMAN: Your Honor, we'd offer Exhibit 695
6 into evidence.

7 MR. MORTARA: No objection, Your Honor.

8 THE COURT: 695, what tab? Is that 10.34?

9 MR. WAXMAN: That is Volume 2, Tab 19. Is it also
10 at 10.34? Yes, it's also at 10.34.

11 THE COURT: I don't think those are the same, but
12 all right. It's admitted.

13 (Defendant Exhibit No. 695 admitted.)

14 BY MR. WAXMAN:

15 **Q.** Let's look at the next demonstrative, 10.35.

16 And looking at this, what does this show?

17 **A.** Well, this is meant to be -- I know there's a lot of
18 numbers on this chart, but it's meant to be a helpful summary
19 of the differences between my model, starting on the left,
20 and the average marginal effect for Asians ethnicity relative
21 to white students for my model, which is minus 0.05 across
22 all the years.

23 And it shows what happens as one moves further and
24 further along the route, getting to Professor Arcidiacono's
25 model which is on the far right. In his model, the average

1 marginal effect of Asian-American ethnicity relative to
2 whites is minus 1.02 percentage points and is also
3 statistically significant.

4 So this is meant to help us understand the steps
5 involved in getting from my model to his model.

6 **Q.** And can you just take us through those steps at a high
7 level? We're going to stop on almost each one of those
8 boxes.

9 **A.** Yes. So the first step here is -- so Professor
10 Arcidiacono includes a set of interaction variables, and
11 actually discussed at some detail in his testimony various
12 features of those interactions. So interactions like gender
13 and race, gender by race.

14 If you take my model and include all the
15 interactions that Professor Arcidiacono includes in his
16 model, the average marginal effect changes a tiny bit, from
17 minus 0.05 to minus 0.08.

18 If in addition to that you exclude intended career
19 and staff interview indicator, which Professor Arcidiacono
20 does, the average marginal effect rises to a magnitude to
21 minus 0.19. It's still not statistically significant.

22 If one in addition to that set of exclusions
23 further excludes parental occupation -- so there's parental
24 occupation variables for mother and parental occupation
25 variables for the father -- then the average marginal effect

1 rises to minus 0.38. So around a third of a percentage point
2 differential and statistically significant.

3 If on top of that in addition you exclude the
4 personal rating variable, then the average marginal effect
5 rises in magnitude to minus 0.79. So roughly doubles in
6 magnitude and it remains statistically significant.

7 If in addition to that you estimate that class of
8 model, so excluding all those variables and including these
9 interactions but estimate it in single model rather than year
10 by year, the marginal effect gets a little bit more negative.
11 It's not a huge difference.

12 And then finally if one takes that model and then
13 finally excludes the ALDC group, which has been included of
14 course in my model, then the average marginal effect rises to
15 minus 1.02 and remains statistically significant.

16 THE COURT: I'm sorry. I hate to keep interrupting
17 you, but I just want to make sure I get this while he's here.

18 Between the two of you, you've given like a
19 hodgepodge, like an a la carte menu of things you can include
20 or exclude, right? So here you've put them back in, in a
21 certain order?

22 THE WITNESS: One way to they about it -- yes,
23 thank you, Your Honor.

24 One way to think about it is you start with my
25 model and you make some exclusions. So you do this

1 interaction thing, which doesn't make too big of a
2 difference. Go from minus .05 to minus .08.

3 And after that, you start making some exclusions,
4 so you exclude the intended career and staff interview. You
5 exclude the parental occupation. You exclude the personal
6 rating. You pool the data, which one could think about
7 excluding the fact that the model differs from year to year a
8 little bit. And then finally, you exclude the ALDCs.

9 With respect, my interpretation is you start with
10 my recipe and then you take out some parts of it. You take
11 out parts.

12 THE COURT: I'm interested in the order in which
13 you take out the ingredients, what the effect is.

14 So what if I thought the you first four things
15 should be in but I wanted to do it by single year and I
16 wanted to include the ALDCs? Is there any way to look at
17 these numbers and have it correlate back to that? Could I
18 figure out what that is from looking at this?

19 THE WITNESS: Not directly. Roughly speaking, the
20 magnitudes would stay the same. But not directly. Yeah, so,
21 for instance starting with -- the difference between the
22 pooled and unpooled model is not usually very large.

23 But starting from the pooled model without the
24 ALDCs and adding the ALDCs makes the effect minus two or
25 minus something in that kind of magnitude. So you could

1 argue that that's about -- that would be somewhat similar.

2 THE COURT: Can you add those two numbers together
3 and get the effect?

4 THE WITNESS: Not quite. If Your Honor has a
5 particular set order that she'd like, I'm sure we could get
6 that for you.

7 THE COURT: We can't do that either. I'm just
8 trying to understand if there's a way to extrapolate that
9 data from not just you but what he's given me too.

10 Sorry. Go ahead, Mr. Waxman.

11 MR. WAXMAN: I'm guessing that you don't want the
12 explanation for why it's not always arithmetically similar.

13 THE COURT: No. Because it looks like -- I mean,
14 you're going from, for example, excluding the personal rating
15 to the pooling data thing, it's a very small change. But
16 that change could be much larger if you put it at the other
17 end of the graph, right?

18 THE WITNESS: That particular change wouldn't be
19 too much larger at the other end of the graph. It would be a
20 little bigger but not much larger.

21 THE COURT: How can I figure that out from looking
22 at this?

23 THE WITNESS: I apologize, Your Honor. You can't.

24 That particular exercise, I remember. I mean, I've
25 certainly done all kinds of different permutations, and I'm

1 sure Professor Arcidiacono has too. So I have a vague sense
2 of it. The precise magnitudes, it's not strictly the same in
3 the order. But roughly speaking, it would stay the same.

4 THE COURT: So not to be cynical about this, but
5 are you guys ordering the data the way you put it in and take
6 it out? Because he did these same sorts of analysis. I'm
7 sort of asking this on behalf of statisticians all over. Are
8 you guys -- do you guys -- wouldn't it be a way to manipulate
9 the data by the order in which you choose to put the
10 variables in and out?

11 THE WITNESS: Not -- well, actually I believe that,
12 Your Honor, that the chart that he showed was actually from
13 my report. So I believe that there was a slightly different
14 order or something, but I think the general tenor of it would
15 be the same.

16 THE COURT: Okay.

17 THE WITNESS: It's possible that -- I assume I'll
18 be here tomorrow. It's possible that I could --

19 THE COURT: That's likely.

20 THE WITNESS: It's possible I could have a clearer
21 statement for you tomorrow morning.

22 THE COURT: I'm not looking for extra data. I just
23 want to understand the data you have here. No criticism
24 intended, but I assume that you're both presenting the data
25 in the way that's most efficacious for your models. I'm just

1 wondering if I want to buy into the some variables but not
2 others, if there's any way to look at his models or your
3 models and figure out what that would look like.

4 THE WITNESS: I would say, Your Honor, that in my
5 report there are versions of this type of analysis done in
6 slightly different orders. That's the best I've got, off the
7 top of my head.

8 MR. MORTARA: Your Honor, maybe I can help. We
9 would be absolutely fine, and we would invite Professor Card
10 to take just the personal rating out of what he's showing as
11 his preferred model here and see if that's statistically
12 significant.

13 MR. WAXMAN: I believe we're going to come to this,
14 Your Honor, in the fullness of time. If for some reason I
15 miss, I'm highly confident that my friend will direct his
16 attention to that question.

17 BY MR. WAXMAN:

18 Q. Let's turn now to demonstrative 10.36 and start with the
19 first difference that you identified between your model and
20 Dr. Arcidiacono. And that is just to summarize what?

21 A. So the first difference is whether the ALDCs are included
22 as part of the model or are dropped before we start
23 estimating the model.

24 Q. You included them and he excluded them, correct?

25 A. That's correct, yes.

1 **Q.** Does that make any sense to you?

2 **A.** To tell you the honest truth, no.

3 I think all of the evidence I've seen and all of
4 the testimony and so on suggests that this group is part of
5 the process. The ALDCs are evaluated, they all have
6 admissions folders, they all -- they're evaluated against
7 other candidates in the year.

8 The ALDC group is a highly competitive group, as
9 I'm going to show, along lots of other dimensions besides
10 just the fact that they're ALDCs.

11 So to exclude, they're almost 30 percent of the
12 overall group. So excluding this highly competitive group
13 who are 30 percent of the admissions in my mind would be kind
14 of like estimating a model for retirement and excluding all
15 the people over 65 or something like that.

16 **Q.** Could you please turn to Tab 28 in Volume 2 and tell me
17 when you've found Defense Exhibit 706.

18 **A.** 706?

19 **Q.** I believe it's 706. Either that or I've written it down
20 wrong.

21 **A.** Yes.

22 **Q.** What is this?

23 **A.** So this is a simple summary of the share of admitted
24 students in ALDC categories.

25 MR. WAXMAN: Your Honor, we offer Defendant's

1 Exhibit 706.

2 MR. MORTARA: No objection.

3 THE COURT: Admitted.

4 (Defendant Exhibit No. 706 admitted.)

5 BY MR. WAXMAN:

6 **Q.** Please turn now to demonstrative 10.37. Using this
7 demonstrative, Professor Card, could you explain the reasons
8 that you included the ALDC applicants?

9 **A.** Yes. So reiterating some of the same points I've already
10 raised, the three main reasons are the following:

11 First, ALDCs are part of the same process, so
12 they're evaluated against each other. And if ALDCs -- more
13 ALDCs get in, fewer of other people get in, exactly as we
14 understand the whole process to work. So understanding the
15 process as a whole or understanding Harvard admissions and
16 understanding whether that's, in my view, a bias against
17 Asians would necessarily take account of the fact that some
18 Asians are ALDC and many admitted students are ALDCs and so
19 on.

20 Second point related to that is that 30 percent of
21 the admitted students are ALDCs. So as I said, ignoring this
22 highly competitive group who are fairly likely to get in and
23 comprise almost a third of the overall admitted pool seems
24 completely nonsensical to me. It seems like you're ignoring
25 a very big subgroup of people.

1 And finally, the ALDCs have very strong
2 characteristics. So I'm going to show in a couple of slides
3 that they have higher characteristics than other students in
4 terms of many, many features. And so their presence in the
5 model helps to pin down just how valuable some combinations
6 of these skills are or these attributes are. And that's
7 important in understanding the competitive process for
8 getting into Harvard.

9 **Q.** Turning to demonstrative 10.38, what does that show?

10 **A.** This is a simple comparison of the share of ALDCs in the
11 overall applications pool, which is 5 percent. So it's a
12 little bit smaller than the set of students that have three
13 strengths. Remember, it was around 7 percent. But like that
14 group, they are substantially overrepresented in the pool of
15 admitted students. So they're 29 percent or six times more
16 likely to be admitted than other students.

17 MR. WAXMAN: Please turn, Mr. Lee, to the next
18 demonstrative, 10.39.

19 **Q.** What does this show?

20 **A.** So this shows at a very high level differences between
21 ALDC and non-ALDC applicants and the comparison within ALDC
22 category and within non-ALDC category between whites and
23 Asians.

24 And I believe this is responsive to a question that
25 Her Honor raised some time ago in the trial which was --

1 **Q.** Very prescient of you.

2 **A.** The first column shows the overall admission rate for
3 ALDCs and non-ALDCs. And so overall ALDCs as a group have
4 about a 44 percent admission rate, non-ALDCs about 5.5.

5 Amongst white applicants, 8 percent of white
6 applicants are ALDC, 92 percent are non-ALDC. The admission
7 rate for white ALDCs is about 43.6 percent.

8 If we go over to Asian-American applicants, the
9 current share of Asian-American applicants on average in my
10 sample is 2 percentage points. And the admission rate for
11 Asian-American ALDCs is 44.1 percent. So consistent with
12 some of the stuff we were talking about before, even without
13 controlling for other factors, Asian students have a slightly
14 higher admission rate than white students if they're ALDC.

15 And looking now at the bottom row for non-ALDCs, in
16 the Asian group that's a larger fraction. So 98 percent of
17 Asian students are there. But again within the non-ALDC
18 group, one sees Asian admission rates are actually higher
19 than white admission rates.

20 **Q.** And what implication does this have?

21 **A.** Well, the most important implication I think is that in
22 understanding the Harvard admissions process and
23 understanding differences at a high level between these
24 groups, whites and Asians, it's very important to understand
25 the differences between ALDC and non-ALDC status. So there

1 are very large differences between ALDC students and non-ALDC
2 students, not just their tips because of the process but
3 actually because of some other characteristics.

4 And I think that's a thing that Harvard itself has
5 known for a very long time. In fact, it's one of the main
6 conclusions that came out of the Office of Civil Rights
7 analysis that was done back in the 1990s. One of their main
8 conclusions was that this difference was very important in
9 understanding the process.

10 **Q.** Would you please turn to Volume 2, Tab 9, and tell me
11 when you have Defense Exhibit 679.

12 **A.** Yes.

13 **Q.** What is it?

14 **A.** It's two tables. The first is ALDC attributes for
15 Asian-American and white students, and the second is
16 admission rates of ALDC applicants by race.

17 **MR. WAXMAN:** Your Honor, we offer Defense
18 Exhibit 679.

19 **MR. MORTARA:** No objection, Your Honor.

20 **THE COURT:** Admitted.

21 (Defendant Exhibit No. 679 admitted.)

22 **BY MR. WAXMAN:**

23 **Q.** Have these dynamics -- I'm sorry. You answered that
24 question.

25 Now please turn to Tab 6 in Volume 2, which is

1 Defense Exhibit 674.

2 **A.** Yes.

3 **Q.** What is that?

4 **A.** This is a summary, admission rates for applicants who are
5 non-athletic recruits, lineage applicants, on dean's or
6 director's list, children of Harvard faculty and staff,
7 ALDCs.

8 MR. WAXMAN: Your Honor, we offer Defense
9 Exhibit 674.

10 MR. MORTARA: No objection, Your Honor.

11 THE COURT: This is the admission rate for
12 non-ALDCs.

13 THE WITNESS: Yes. Thank you, Your Honor. My
14 apologies. The titles get long in some of these things.

15 (Defendant Exhibit No. 674 admitted.)

16 BY MR. WAXMAN:

17 **Q.** Earlier in the trial, did you hear or review testimony
18 about similar calculations done in the admissions office
19 known as NLNA admission rates?

20 **A.** Yes.

21 **Q.** Is it useful to calculate a non-legacy, non-athlete
22 admission rate or a non-ALDC admission rate?

23 **A.** I certainly think it can be informative, yes.

24 **Q.** Does that mean that you need to take legacy and athletes
25 out of your regression model?

1 **A.** No, not at all. My understanding is there is a large
2 difference in admission rates between ALDCs and non-ALDCs,
3 just as there's a large difference between admission rates of
4 students with two or three strengths and other students or
5 students with lots of other dimensions.

6 And my understanding is that Harvard has been aware
7 of the difference in admission rates between ALDCs and
8 non-ALDCs for a long time, and that might be one reason it
9 would make sense to keep track of it.

10 **Q.** And does your regression model control for legacy and
11 athlete status?

12 **A.** Yes, certainly. All of my models would control for any
13 tip that that individual student gets on top of whatever
14 characteristics they have, yes.

15 **Q.** Is it fair to say that including them in the model and
16 controlling in this way is basically a more elaborate way of
17 doing the simple descriptive comparison?

18 **A.** Yes. In my view, yes.

19 **Q.** Now, let me ask you whether in your view there is a
20 downside in taking legacies and athletes completely out of
21 the model?

22 **A.** Yes. In my view, as I mentioned on my overview slide,
23 one downside of that is you're not really looking at the
24 actual applicant pool anymore when you try and fit your
25 model. So your model is trying to evaluate who got in

1 without reference to this other 30 percent of the group that
2 got in.

3 So if you're trying to look at the relative value
4 of certain characteristics like are you intending to major in
5 humanities or something like that, and obviously the
6 admissions people are thinking about how many people are
7 going to be taking humanities this year, understanding, okay,
8 how many people in the ALDC group are going to take
9 humanities versus how many people in the non-ALDC are
10 intending to major in humanities or engineering or any of
11 these things would be extremely important.

12 Without that information in the model, the model
13 can't contextualize a lot of these other concerns for Harvard
14 correctly.

15 **Q.** Professor Card, you mentioned that the ALDC applicants
16 are more likely to be admitted than other applicants. Is
17 that just because they're ALDC applicants?

18 **A.** No, not at all.

19 **Q.** Please turn in your binder to Tab 27. That's Volume 2,
20 Tab 27.

21 **A.** Yes.

22 **Q.** What is this?

23 **A.** It's a set of slides -- tables showing predicted
24 probability of admission for ALDC and non-ALDC, a proportion
25 of ALDC and non-ALDC receiving ratings of 1 and 2.

1 MR. WAXMAN: Your Honor, we move defense
2 Exhibit 705 into evidence.

3 MR. MORTARA: No objection, Your Honor.

4 THE COURT: Admitted.

5 (Defendant Exhibit No. 705 admitted.)

6 MR. WAXMAN: Please turn now, Mr. Lee, to
7 demonstrative 10.40.

8 BY MR. WAXMAN:

9 **Q.** What does this show?

10 **A.** So this is a simple comparison of ALDC and non-ALDC
11 applicants in terms of their probabilities of receiving
12 ratings of 1 or 2.

13 The first four sets of bars concern the profile
14 ratings that we've talked about before: the academic rating,
15 personal rating, extracurricular rating, and athletic rating.

16 The next set of five bars refer to the teacher
17 ratings. So each student has recommendation letters from two
18 teachers and a guidance counselor and there's a rating
19 assigned to them.

20 Then there's two ratings signed by alumni
21 interviewers. One is alumni personal rating and one is the
22 alumni overall rating.

23 And then finally on the right, far right, I've
24 shown the fraction of the ALDC and non-ALDC who have three or
25 more strengths. So in other words, three or more of these

1 profile ratings of 2 or better. And as I noted before,
2 that's a very, very strong correlate of being admitted.

3 And you can see when you look across all of these
4 different categories that the ALDC group is substantially
5 stronger than the non-ALDC group.

6 And I would point out one thing you might be
7 concerned about in this comparison is the athletic rating.
8 Obviously the ALDC group includes athletic 1s, and so there's
9 a certain set there. But even if one excludes the As, so
10 only looks at LDCs, the pattern looks the same.

11 In fact, on most of the other ratings, the LDCs are
12 substantially better than the As, so that comparison looks
13 quite good. And this general pattern of higher ratings in
14 multidimensionality is very strongly true of the LDCs as well
15 as the ALDCs.

16 **Q.** Just to be entirely clear, do any of these bars reflect
17 any admissions tip that is given to ALDC applicants?

18 **A.** No.

19 **Q.** Now, Dr. Arcidiacono excluded all of the ALDC applicants
20 from his model, correct?

21 **A.** Yes.

22 **Q.** Did he suggest a way in his report of dealing with ALDC
23 attributes other than excluding the ALDC applicants from the
24 model?

25 **A.** Yes, he did.

1 **Q.** Please turn to Tab 54 in your volume binder 2, and tell
2 me when you've found Plaintiff's Exhibit 435.

3 **A.** Yes.

4 **Q.** Do you see that this is Dr. Arcidiacono's rebuttal
5 report?

6 **A.** Yes.

7 MR. WAXMAN: Mr. Lee, can we zoom in on page 36,
8 the sentence beginning, "It is thus essential."

9 **Q.** Professor Card, can you just read us the sentence, that
10 sentence.

11 **A.** Yes. The sentences that follow are when he says "these
12 applicants," he's talking about ALDCs.

13 "It is thus essential to either, one, remove these
14 applicants from the analysis; or two, allow for the
15 possibility that the effect of race is different for these
16 applicants, i.e., interacting these variables with race."

17 **Q.** Okay. And you didn't remove the ALDC applicants from
18 your analysis, correct?

19 **A.** Correct. I did not.

20 **Q.** Did you instead try Dr. Arcidiacono's alternative
21 suggestion?

22 **A.** Yes, I did.

23 **Q.** And what did you do?

24 **A.** Well, exactly following his suggestion, what I did was I
25 took the model that I used, my main or preferred model, and I

1 included a set of interactions for each of the A and the L
2 and the D and the C category that allow those tips to vary by
3 race.

4 So for example, if one was concerned that the
5 legacy tip applied differently to African-Americans than to
6 other groups and that somehow was causing problems for my
7 model, then this would be one way to get at that.

8 **Q.** Please turn to Tab 21 in Volume 2. Do you find Defense
9 Exhibit 697?

10 **A.** Yes.

11 **Q.** What does it show?

12 **A.** This is a summary exhibit, average marginal effect of
13 Asian-American ethnicity in Professor Card's model
14 interacting ALDC attributes with race.

15 **Q.** Is that the attributes you just described?

16 **A.** Yes.

17 MR. WAXMAN: Your Honor, we offer Defendant's
18 Exhibit 697 into evidence.

19 MR. MORTARA: No objection.

20 THE COURT: Admitted.

21 (Defendant Exhibit No. 697 admitted.)

22 MR. WAXMAN: Mr. Lee, let's now turn to
23 demonstrative 10.41.

24 BY MR. WAXMAN:

25 **Q.** What does this show?

1 **A.** This is the estimation results from following that
2 procedure. Now I'm doing exactly what Professor Arcidiacono
3 suggested, which is to interact each of A and L and D and C,
4 each of the tips associated with those four categories with
5 all the different racial groups from the model.

6 And I'm showing the average marginal effects of
7 Asian-American ethnicity year by year and on average in my
8 model.

9 And it's really quite remarkable how similar these
10 are to the estimates from my baseline model. So they're
11 essentially identical. So none of them are statistically
12 significant. Three are negative and three are positive on a
13 year-by-year basis, again none statistically significant.
14 And the average is minus 0.05 and is not statistically
15 different than zero.

16 **Q.** And so what does this tell you about the statistically
17 significant negative effect of Asian-American ethnicity in
18 the admissions process, allowing for the effect of being an
19 ALDC applicant to vary by race?

20 **A.** It says that it makes no difference at all in the
21 assessment of the average marginal effects year by year on
22 average.

23 **Q.** Did you in your analysis try excluding any group of the
24 ALDC applicants from your model?

25 **A.** Yes. Professor Arcidiacono in his rebuttal, second

1 report, basically fits what he calls an extended sample but
2 now excluding athletes. So he's made a special case that
3 athletes should be excluded in some sense no matter what.

4 And so what I did was I took my model and simply
5 excluded athletes to see how different the results would be.

6 **Q.** Would you please turn to Tab 20 in Volume 2. Do you find
7 Defense Exhibit 696?

8 **A.** Yes.

9 **Q.** What is this document?

10 **A.** The first table is average marginal effect of
11 Asian-American ethnicity in Professor Card's model when
12 recruited athletes are excluded. And the second is a summary
13 table that shows the average marginal effect comparing
14 different choices between my model and his model when
15 athletes are excluded.

16 **MR. WAXMAN:** Your Honor, we offer defense
17 Exhibit 696 into evidence.

18 **MR. MORTARA:** No objection.

19 **THE COURT:** Admitted.

20 (Defendant Exhibit No. 696 admitted.)

21 **MR. WAXMAN:** Let's turn, Mr. Lee, to the next
22 demonstrative 10.42.

23 **BY MR. WAXMAN:**

24 **Q.** And let me ask you, Dr. Card, to please explain what this
25 is looking at and what you found.

1 **A.** So this is the results of estimation from my model, now
2 excluding recruited athletes entirely from the analysis.

3 And I'm showing estimated average marginal effects
4 year by year and on average across the six years, exactly in
5 the format of all the other tables that I've presented.

6 And you can see that the average marginal effects
7 year by year are very similar to the ones that we've seen in
8 previous tables. The average marginal effect across all the
9 years is minus 0.02 versus minus 0.05, so it's a tiny bit
10 different but not in any important way different.

11 None of these are statistically significant, just
12 as in my main model.

13 **Q.** So is it fair to say that even excluding recruited
14 athletes, as Professor Arcidiacono does even in his expanded
15 model, shows no statistically significant average marginal
16 effect of Asian-American ethnicity on admissions
17 probabilities?

18 **A.** Yes.

19 MR. WAXMAN: So let's put up, Mr. Lee, please,
20 DD 10.37 again.

21 **Q.** So just to recap, can you summarize again why you
22 included ALDCs in your model?

23 **A.** Yes. So just to summarize, my understanding of the
24 process, the results of reading a lot of depositions and
25 listening to the trial and so on as well as documentary

1 materials put together by Harvard itself, including like web
2 questions about who's included in the process and not, all of
3 that to me says that ALDCs are, in fact, part of the process.

4 Secondly, they are a very important part of the
5 overall admitted pool. So it's true that they're
6 underrepresented in the set of applicants, but like other
7 students who are strong -- and I've shown these students are
8 particularly strong in many, many dimensions -- they're more
9 likely to be admitted than other students. So they end up
10 representing 30 percent of the admissions pool.

11 And so I think it's important to understand the
12 process and the composition of the class to understand that
13 group and include them in the analysis.

14 And finally, as I emphasized, the third point, if
15 you're trying to understand the way that Harvard's admissions
16 committee is evaluating different factors in some kind of
17 context vis a vis the rest of the class, then throwing away a
18 third of the people who will be admitted just is not going to
19 work because you're not going to be able to look at who was
20 being compared to who in that evaluation process.

21 **Q.** Let's now turn to defense demonstrative 10.43. And now
22 let's go to the second line of your demonstrative showing the
23 major differences in modeling, how you dealt with six years
24 of data in your -- the six years of data at issue here.

25 Did you run your model on a year-to-year basis?

1 **A.** I did, yes.

2 **Q.** And why did you do that?

3 **A.** Well, there's a variety of reasons. I'm going to
4 summarize them at a high level in the next slide, I believe.
5 Yes.

6 **Q.** Let's by all means see the next slide.

7 MR. WAXMAN: Mr. Lee. Thank you.

8 **A.** So one reason just conceptually is that the process is
9 year by year and so fitting a year-by-year model seems a
10 straightforward way to deal with that, and very intuitive and
11 obvious.

12 A second reason is that in the early years of the
13 sample, Harvard had dropped early action, as we heard
14 President Simmons talking about, when they experimented with
15 getting rid of early action and then brought it back.

16 So the process was somewhat different. So
17 different issues were at play, I think, in terms of
18 understanding admissions decisions potentially. And so I
19 want to have a year-by-year model to allow things to be
20 different in the early action in different years.

21 A third issue is that over time, my
22 understanding -- and I think the evidence shows this is true.
23 My understanding is that Harvard is gradually having
24 different priorities for who it would like to look for.

25 For example, just before my sample got started,

1 they opened up the School of Engineering and Applied Science,
2 a major initiative for them. So they are looking for
3 building up the computer science department, which is many,
4 many top departments are trying to do that over this period.
5 So their priorities are changing.

6 Related to that but somewhat different is the
7 applicants are changing. So an example I think that's
8 important, certainly at my university and I believe at
9 Harvard as well, is fewer and fewer applicants each year are
10 applying for certain fields like humanities. So the
11 characteristics of the students are changing.

12 A fifth reason is that there's different codings of
13 different variables in different years.

14 So for instance, Harvard has a so-called docket
15 system. And they actually changed the docket system and
16 introduced a new docket from the first year to the later
17 years of the sample. So it's I think important to think
18 about that kind of coding.

19 And that kind of coding difference affects quite a
20 few different variables. It affects the fraction of students
21 who are, for instance, coded as disadvantaged changed from
22 year to year. And as I'll show below, the fractions are
23 coming -- fractions of students who are classified with
24 different parental occupation and so on changes.

25 Finally, not shown on the slide, but there's a

1 sixth set of reasons. So purely from a statistical point of
2 view, not substantive -- I would think of these as
3 substantive reasons.

4 But purely from a statistical point of view,
5 there's a couple of important features of a year-by-year
6 model. So first I'm going to show that fitting a
7 year-by-year model gives rise to a model that has more
8 explanatory power. So that's usually considered a superior
9 feature. I'm going to show it gives rise to an estimated
10 marginal effect that's more precise or more powerful. So
11 it's got higher statistical power.

12 And finally, as I showed in my report, there's a
13 formal statistical way to see whether a year-by-year model is
14 preferred over a model that's pooled. And that kind of
15 statistical test prefers the year-by-year model.

16 **Q.** Would you please turn, Professor Card, to Tab 25 in the
17 same volume, Volume 2, and tell me when you've found Defense
18 Exhibit 703.

19 **A.** Yes.

20 **Q.** What is Defense Exhibit 703?

21 **A.** So this is an exhibit showing graphically proportion of
22 applicants by intended concentration in different years.

23 MR. WAXMAN: We offer defense Exhibit 703, Your
24 Honor.

25 MR. MORTARA: No objection.

1 THE COURT: Admitted.

2 (Defendant Exhibit No. 703 admitted.)

3 BY MR. WAXMAN:

4 Q. Turn to Tab 26, please, in the same volume.

5 A. Yes.

6 Q. Do you find Defense Exhibit 704?

7 A. I do, yes.

8 Q. And what does this show?

9 A. It's two exhibits, one showing the number of Harvard
10 applicants receiving an application fee waiver by year, and
11 one showing the number of Harvard applicants identified as
12 disadvantaged by year.

13 MR. WAXMAN: We offer defense Exhibit 704.

14 MR. MORTARA: No objection.

15 THE COURT: Admitted.

16 (Defendant Exhibit No. 704 admitted.)

17 BY MR. WAXMAN:

18 Q. And, Professor Card, did you also calculate an average of
19 the year-by year results?

20 A. Oh, yes, certainly. That's what I'm always doing in the
21 bottom row of my tables. I'm always showing an average
22 across all the years.

23 Q. And can you explain to the Court why you do that?

24 A. Yes. So my understanding is that these six years are the
25 issues -- are the years under contention.

1 So what's important to understand would be the
2 average difference between Asian students and white students
3 that remain on average across these eight years. So finding
4 the average marginal effect across those six years would be
5 the appropriate thing to do, and that's what I tried to do.

6 **Q.** Did you hear Dr. Arcidiacono testify that his model
7 allows for more "statistical power" for some of the
8 coefficients?

9 **A.** Yes.

10 **Q.** Do you agree with that?

11 **A.** I agree that it potentially allows statistical power for
12 certain kinds of coefficients. But for the coefficient
13 that's fundamental to this case, which is the average
14 marginal effect for Asian-American applicants as a whole, the
15 average across all Asian and other students and assessing
16 that average effect, it's not correct.

17 In fact, if you look at and compare the statistical
18 power, precision of the estimates from his model versus my
19 model, my model is superior. It has a higher statistical
20 power.

21 **Q.** Did you examine how the precision of you -- I think you
22 answered this, but let me just make it clear.

23 Did you examine the precision of your model and how
24 it compares to the precision of Dr. Arcidiacono's model?

25 **A.** I did. I did that directly, yes.

1 Q. Would you please turn to or can we now have defense
2 demonstrative 10.45.

3 And using demonstrative 10.45, can you explain what
4 you found?

5 THE COURT: Are you going to now explain about what
6 you mean by "statistical power"?

7 THE WITNESS: Yes. Yes, Your Honor, I'm going to
8 try.

9 THE COURT: If you think you've already done it,
10 you've lost me. So keep going.

11 MR. WAXMAN: And the examiner.

12 THE WITNESS: Yes. What the term means, it has a
13 formal and statistical meaning, but I'm not going to try and
14 explain that because that's hopeless and not very useful.

15 What I'm going to do instead is what it's used to
16 kind of mean informally. It means that what you're trying to
17 do is get an estimate of something like, for instance, the
18 average marginal effect that you can say is as precisely
19 estimated as possible.

20 So "precisely estimated" means that when you get
21 that estimate it's less likely to have occurred by chance,
22 given the estimate that you got. And so it means that for a
23 given estimate if both of us have an average marginal effect
24 of 2, say an estimate, one of those could be statistically
25 significant and one might not be.

1 The one that is statistically significant, the
2 reason why it's statistically significant is because that
3 model had more power. It was able to say, well, this given
4 estimate, this 2 percentage point difference is different
5 than zero. The other model, the weaker model is not able to
6 do that.

7 Does that help answer it?

8 THE COURT: How do you get to the power
9 measurement?

10 THE WITNESS: Okay. Thank you. That's what this
11 slide is meant to do. So the way that we assess statistical
12 power is by something called a standard error, which is an
13 assessment of the range of values that could have
14 generated -- very closely related to the range of values that
15 could have estimated the estimate that you got by chance.

16 So if the standard error is large, it means that I
17 have an estimate. That particular estimate could have come
18 about even though the truth is in a very wide range,
19 including, for instance, zero, which is always an important
20 reference point.

21 So having a small standard error, on the other
22 hand, means that I've got an estimate and the range of
23 possible values of the truth that could have given rise to
24 that estimate is quite narrow.

25 So a powerful model has a small standard error,

1 which means that you went into the data, you estimated your
2 model, you had a lot of power, you were able to get an
3 estimate that when you see that estimate, you know the range
4 of possible values of the truth that could have estimated it
5 is quite small.

6 And I apologize. The way statisticians think about
7 these problems is completely unintuitive for many people,
8 including all of my students for six, seven years. But
9 that's what it means.

10 THE COURT: Is this .14 and .15, is that
11 statistically significant or are you telling me the two
12 models are of equal strength?

13 THE WITNESS: Actually that's a separate issue. I
14 don't actually know if it's statistically significant.

15 I would say that my model is slightly more
16 powerful. It's certainly not less powerful. There would be
17 a potential way to assess whether it's significantly more
18 powerful, but I am not asserting that.

19 MR. WAXMAN: Your Honor, I'm about to move to
20 another subtopic. I don't know what Your Honor's pleasure is
21 in terms of scheduling today.

22 THE COURT: Just for my own brain power, I'd rather
23 not stop in the middle of a topic. Is your next topic going
24 to be more or less than ten minutes?

25 MR. WAXMAN: I think that it will be --

1 THE COURT: And what's the statistical strength of
2 your estimate?

3 MR. WAXMAN: Exceptionally weak. It's barely
4 statistically -- it's barely confidently above zero. Yes, it
5 is -- I can do it in ten minutes.

6 THE COURT: I'm happy to take the ten minutes.

7 MR. WAXMAN: I have to say that I'm feeling the
8 burden of yet another fire drill, so I'm happy to press on.

9 THE COURT: It's been a long day. Are you okay
10 keeping going ten more minutes?

11 THE WITNESS: Yes, Your Honor.

12 THE COURT: Anybody else have any serious
13 objections to ten more minutes? Let's go.

14 BY MR. WAXMAN:

15 Q. Professor Card, please turn to --

16 MR. WAXMAN: Or Mr. Lee, please put up defense
17 demonstrative 10.46.

18 Q. And going back to this, what is the third line showing?

19 A. So this line is summarizing the set of variables that are
20 included as part of the -- in my view, are included as part
21 of the actual admissions process.

22 So this would be parental occupation, intended
23 career, staff interview, personal rating. Included in my
24 model but excluded from Professor Arcidiacono's model.

25 Q. And why did you include these variables in your model?

1 **A.** Well, as I said, my understanding is that each of these
2 variables is, in fact, used by admission officers in
3 evaluating candidates. I think there's substantial testimony
4 from officers in previous depositions. There's also, for
5 example, in some of the case studies that were talked about
6 as part of the training materials for admissions officers,
7 many of these issues are mentioned.

8 **Q.** Now, you mentioned earlier when you were talking about
9 should I or should I not retire, since I'm on the bubble,
10 that omitting factors can cause bias.

11 Can you just remind us what that concern is?

12 **A.** Yes. The concern is that there's some characteristic of
13 one group of students relative to another that's somewhat
14 different and that that characteristic is evaluated or valid
15 in the admissions process.

16 And if you don't take account of the difference in
17 that characteristic, then it will become part of the
18 unobserved component of the model. And the model, not
19 knowing what's going on, will essentially assign that
20 difference as part of the average marginal effect between the
21 two groups.

22 **Q.** And is omitted-variable bias a concern with the variables
23 that Dr. Arcidiacono has omitted from his model?

24 **A.** Yes. In each case I believe that there's a substantial
25 concern with omitting each of these variables because each of

1 them is, in fact, part of the admissions process and has some
2 power in the statistical model of the admissions process.
3 And each of them differs somewhat between Asian and white
4 students.

5 **Q.** I see. And my next question was why.

6 Is the why that these factors vary by race?

7 **A.** Yes, somewhat.

8 **Q.** And they can be associated with admissions outcomes?

9 **A.** Yes.

10 **Q.** What is the effect of omitting the intended career,
11 parental occupation, and staff interview factors in
12 Dr. Arcidiacono's model?

13 **A.** Well, I think as we showed in the walk-through slide
14 where we go from his model to my model, if one starts with my
15 model and excludes that three sets of variables, then it
16 makes a minor technical adjustment for the interactions.
17 Then the effect of estimated average marginal effect of
18 Asian-American ethnicity becomes negative and statistically
19 significant.

20 **Q.** I think there are many factors. I think your model
21 accounts for 200 factors every year.

22 Among those factors, are there other factors which
23 if omitted from your model would have produced the opposite
24 effect?

25 **A.** Yes, certainly.

1 **Q.** Did you exclude any variables, any factors that would
2 have produced the opposite effect?

3 **A.** I didn't, no.

4 **Q.** Did you hear Dr. Arcidiacono -- let me ask you, did
5 Dr. Arcidiacono exclude any factors which if omitted would
6 have produced the opposite effect?

7 **A.** Not to the best of my knowledge, no.

8 **Q.** Did you hear Dr. Arcidiacono refer to "overfitting a
9 model"?

10 **A.** Yes.

11 **Q.** What does "overfitting" mean?

12 **A.** So overfitting is an issue that arises particularly when
13 one has a relatively small sample and one is concerned that
14 when one adds a spurious set of variables, a set of variables
15 that isn't really part of the process, like hat size or eye
16 color, those kind of variables, variables that don't really
17 belong in the model, including those variables in the model
18 can lower the statistical power of the model and lead to a
19 situation where when they're included in the model, an effect
20 won't necessarily change very much, the estimated effect, but
21 it could become statistically insignificant.

22 So overfitting arises when these extra variables
23 are included and kind of reduce the power of the model.

24 **Q.** Do you have any concern that your model was overfitted?

25 **A.** I don't, no.

1 MR. WAXMAN: Did I make my ten minutes?

2 THE COURT: Was that -- I don't?

3 THE WITNESS: Yes, I don't.

4 THE COURT: Was that K-N-O-W or I don't, no.

5 THE WITNESS: Your Honor, I apologize. I don't
6 have any concern that my model is overfitted.

7 MR. WAXMAN: Your Honor, that's the end of this
8 little mini segment.

9 THE COURT: This seems like a good place to stop
10 then. 9:30 tomorrow? Karen, is that good for us? 9:30
11 tomorrow. Do you want to try and start a little earlier to
12 account for the earlier recess, or do you think we're on
13 track?

14 MR. WAXMAN: I would have loved to be another half
15 an hour, 45 minutes beyond. If Your Honor wants to start at
16 9:00, it's totally fine with me.

17 MR. MORTARA: Completely fine with me, Your Honor.
18 I know we're leaving early tomorrow, so it would be more than
19 fine for me.

20 THE COURT: That's exactly why I'm trying to build
21 in the extra time. I'm not sure I can effectively do 9:00.
22 Why don't we shoot for 9:15 and then we can shorten up the
23 lunch break a little bit, too, and get back to the number of
24 minutes.

25 MR. WAXMAN: Thank you.

1 MR. MORTARA: Your Honor, I have one more thing,
2 which is we've resolved, I think, all the issues with the
3 exhibits with the demonstrative exhibit except for one where
4 I asked for some changes to be made. It's Defendant 692.
5 We'll talk about it in the evening. Hopefully there will be
6 nothing tomorrow.

7 THE COURT: I'll get out here as close to 9:00 or
8 9:15 as I can tomorrow. If we need a sidebar first, we'll
9 take it.

10 MR. MORTARA: Your Honor, I'd offer plaintiff's
11 demonstratives 23 to plaintiff's demonstrative 38. Those are
12 demonstratives used for Kahlenberg's and --

13 THE COURT: I'm sorry. 23 to 28? Is that what you
14 just said?

15 MR. MORTARA: PD23 to PD38.

16 THE COURT: Mr. Waxman, I take there is no
17 objection to those?

18 MR. WAXMAN: No objection.

19 THE COURT: So those are all admitted.

20 (Plaintiff Exhibit Nos. PD23 to PD38 admitted.)

21 MR. WAXMAN: Just to be clear, those are only the
22 ones that went in. Mr. Kahlenberg testified --

23 THE COURT: Take a look at them tonight, 23 to 38.

24 (Court recessed at 4:00 p.m.)
25

INDEX OF WITNESSES

WITNESSPAGE

RUTH SIMMONS

Examination By Mr. Waxman 6

Examination By Mr. Connolly 56

DAVID CARD

Examination By Mr. Waxman 73

E X H I B I T S

Defendant ExhibitReceived

133	.....	74
134	.....	21
669	.....	84
671	.....	85
672	.....	85
673	.....	98
674	.....	157
679	.....	156
686	.....	138
693	.....	122
695	.....	145
696	.....	165
697	.....	163
703	.....	171
704	.....	171
705	.....	160
706	.....	153
707	.....	141

^ Government ^ Plaintiff ExhibitReceived

PD23	.....	181
	.....	181

1	PD24	.....
2	PD25	.....	181
3	PD26	.....	181
4	PD27	.....	181
5	PD28	.....	181
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			